FEBRUARY 13, 1960
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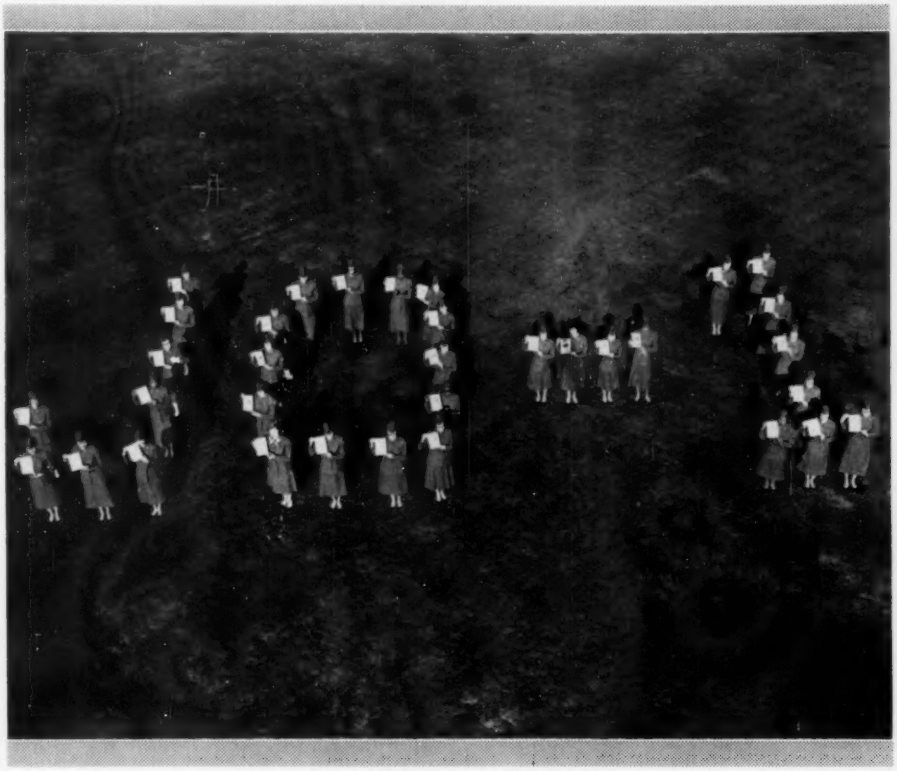
Telephony®

THE JOURNAL OF THE TELEPHONE INDUSTRY



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Guaranteed Circulation This Issue
13,445 of Which 12,880 Is Paid

PREFIX IN WAC's

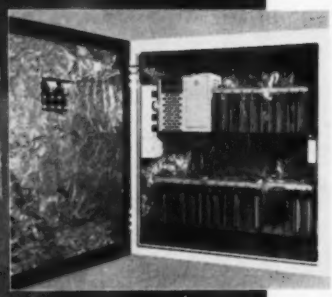
The prefix of the new dial telephone exchange of the Army's Presidio in San Francisco, California, is JO-1 (JOrdan). These WAC's are holding copies of the newly-issued Presidio directory and spell out the prefix on the green in front of the Sixth Army headquarters building.

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

"THERE IS NOTHING FINER THAN A STROMBERG-CARLSON"

Service

stays on even if power goes off!



New standby unit for Stromberg-Carlson "561" Subscriber Carrier keeps your carrier service going during power failures —even under the toughest conditions.

Rugged and efficient, this standby unit can power your subscriber carrier for a full 8 hours. And—unlike other makes—it operates at peak efficiency over a temperature range from 40° below zero to 140° above.

The unit can power a 5-channel system at −40° without harming batteries or charger.

You get the same advantages when you use the unit as standby power for pole-mounted "541" Negative Impedance Repeaters.

Your Stromberg-Carlson representative can give you full technical details, prices and ordering information. In Atlanta call TRinity 5-7467; Chicago: STate 2-4235; Kansas City: HArrison 1-6618; Rochester: HUbbard 2-2200; San Francisco: OXford 7-3630.

STROMBERG-CARLSON
A DIVISION OF **GENERAL DYNAMICS**

FLASHES AND PLUGS

TWO TELEPHONES, TOO MANY. Telephoning a classified advertiser to find out if an ad should be canceled or rerun, Vernette Timms of the Lake Geneva (Wis.) *Regional News* thought she had uncovered a big story.

The ad listed two telephone numbers. When Vernette called one, a young woman answered and explained that she didn't quite know what to do about the ad. "My husband isn't home now," she informed Miss Timms. "Can you call the other number."

Vernette dialed the second number and reached another young woman who answered by saying "My husband isn't home right now. Could you call the other number?"

Thoughts were running wild until a check through the files revealed they weren't referring to the same husband.

•

MINISTER LEFT WAITING AT THE CHURCH. In Delphos, Ohio, neither the bride nor the groom showed up at the church for a morning wedding. The minister grew alarmed.

A series of telephone calls cleared up the mystery. The bride, groom, and all attendants had overslept.

•

EASY DOES IT. In the midwestern city of Milwaukee in January, on one week day, there were 550 men on snow plow details and salting trucks working to keep the city's streets clear. Boss snowplowman Bill Rheinfrank had his hands full directing the job, but he also had to answer the complaints of citizens—complaints by telephone.

Mr. Rheinfrank had a plan. His mind on the basic job of snowplowing, he breezily answered his telephone with "Disneyland!"—which must have intrigued at least some of the callers.

•

HEIR-ING THE NEWS DIFFICULT. A happy new father in Sterling, Colo., the local *Journal-Advocate* reports, was on the telephone to convey to all his friends the good news that his wife had presented him with an heir.

But each time he dialed, he got the busy signal—very frustrating!

At length, he realized he had been dialing his own telephone number.

•

VOICE OF INSPIRATION. The Sunday School teacher was describing how Lot's wife looked back and turned into a pillar of salt.

"My mother looked back once," said interested little Johnny, "while she was driving—and—and—she turned into a telephone pole!"

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Department of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

February 13, 1960

CONTENTS

IN THE NATION'S CAPITAL 19
By Francis X. Welch

TRANSISTORS IN TELEPHONY 22
By Arthur L. Albert

WE HAVE A GOOD REPUTATION, LET'S KEEP IT 24
By Gilbert R. Brackett

THE PLANT MAN'S NOTEBOOK 26
By Ray Blain

PLANT MAN'S QUIZ 27
By Ray Blain

PUBLIC RELATIONS IN THE TELEPHONE BUSINESS, PART 6...GOOD CORPORATE CITIZENSHIP 28
By R. L. Post

USITA OFFERING 1960 FOUR-WEEK MANAGEMENT DEVELOPMENT COURSE 32

THE OPERATOR'S CORNER 33
By Mayme Workman

CHECK LIST HELPS DETERMINE BEST MAN FOR JOB 36
By William J. Milford

COURTS AND COMMISSIONS 38

NEWS ON NEW PRODUCTS 56

H. D. FARGO JR., *President and Director of Advertising* • A. J. STULTS, *Vice President and Advertising Manager* • R. C. RENO, *Vice President and Editor* • DAN S. FARGO, *Vice President and Managing Editor* • DIANNE P. DRUCKER, *Associate Editor* • HELEN HARDIN, *Associate Editor* • FRANCIS X. WELCH, *Washington Editor* • RAY BLAIN, *Technical Editorial Director* • MAYME WORKMAN, *Traffic Editor* • VIVIAN RYDEN, *Circulation Manager*.

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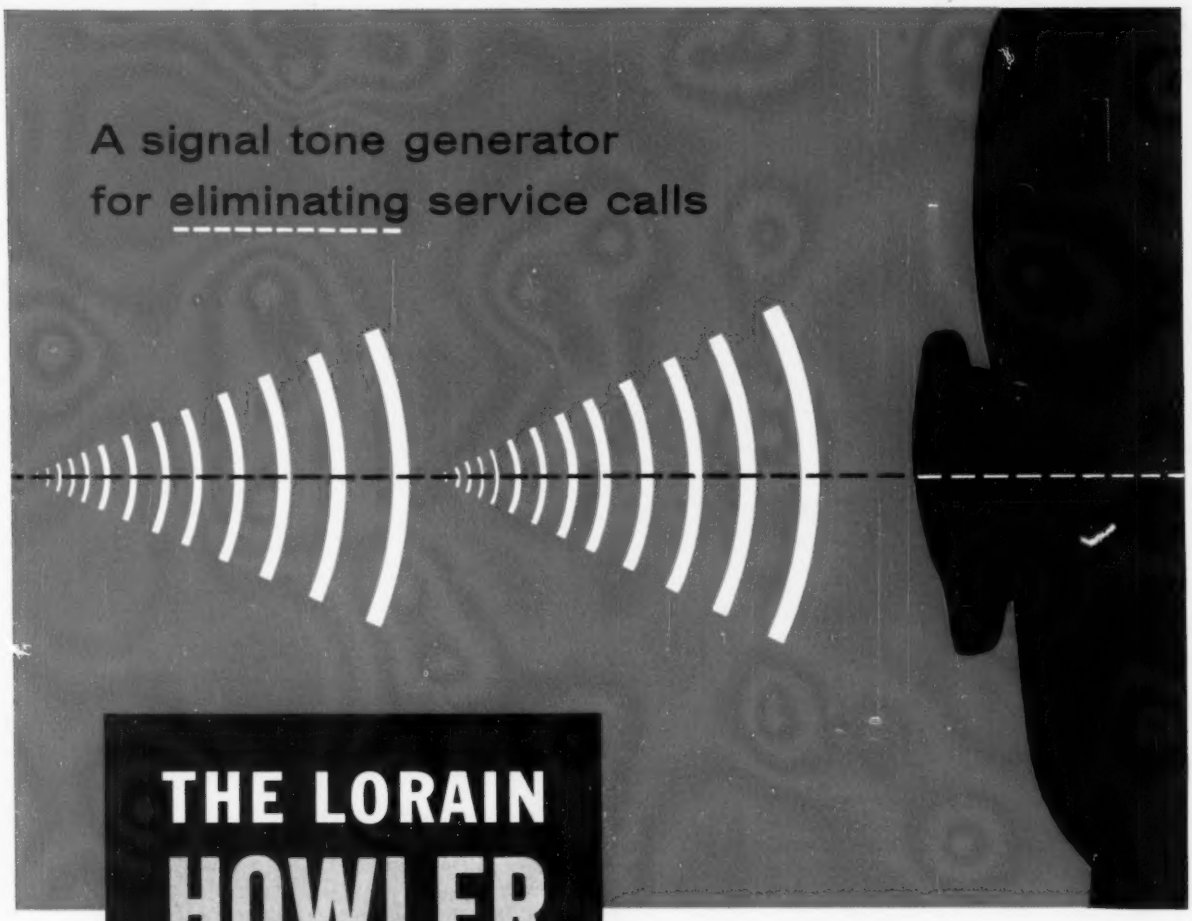
A signal tone generator
for eliminating service calls



THE LORAIN HOWLER

Write for Bulletin 167A

THE TONE THAT HANGS THE PHONE

The Lorain Howler's unique tone can't go unheard, can't be mistaken for any familiar sound. It begins softly on a high note, gradually declines in pitch while it increases in volume. It covers the full frequency range where both ears and receivers are most sensitive.

SAFE FOR EAR, SAFE FOR EQUIPMENT

The slow increase in signal volume allows plenty of time for removal of the receiver from the ear. And the Howler's distinctive tone can be sent out at a much lower voltage than is customary, protecting against damage to receivers or cable cross-talk.

EASY START, AUTOMATIC STOP

The Howler is plugged into the line at the protector frame or test desk. A push-button or a remote key starts it. A relay automatically stops the Howler and restores the line to service when the receiver is replaced. AC and DC input. Signal output: 0—40 volts, 2.5 watts.

THE ONLY COMPLETE LINE OF POWER EQUIPMENT FOR COMMUNICATIONS

our equipment is sold through leading telephone distributors

FLOTROL SUB-CYCLE

LORAIN Products Corporation

1122 F Street Lorain, Ohio Phone: ATlantic 8-9191

Revenue immediately increased 51 per cent at this booth in Platea, Pa., when General Telephone replaced the old style unit with an Alcoa outdoor installation, proving that customers definitely prefer aluminum's brighter, cleaner appearance.

"REVENUE OFTEN INCREASES 50% OR MORE WHEN WE SWITCH TO ALCOA BOOTHS,"

Reports T. J. Schultz, General Commercial Manager, General Telephone Company of Pennsylvania

"Since 1955 we have purchased 177 Alcoa outdoor booths and every one of them has more than paid its way in increased revenue, lower maintenance expense and reduced vandalism damage," says Mr. Schultz.

"An example of the way booths of Alcoa Aluminum boost revenue is this installation in Platea, Pa. Ever since we switched from an old style booth to an aluminum unit and moved the installation a few feet closer to the highway, revenue has shown an average increase of 51 per cent a month.

"Upkeep costs have also gone down since we started installing aluminum booths. Because they are corrosion resistant, occasional washing and sweeping is all that is needed to keep them clean and attractive. And vandalism, too, has been greatly reduced . . . thanks to the excellent lighting and sturdy construction of Alcoa booths."

Like many other companies, General Telephone of Pennsylvania has found Alcoa outdoor booths a sound investment and a sure road to an immediate increase in revenue. Why not find out how Alcoa booths can do the same for you? Write for free brochure and ask your jobber to show you the Alcoa Goodwill Kit—the free promotional package to help you merchandise the new booth to your customers. Aluminum Company of America, 1720-B Alcoa Building, Pittsburgh 19, Pa.

Maintenance costs went down for General Telephone of Pennsylvania when it began using outdoor booths of Alcoa® Aluminum. Occasional sweeping and washing with soap and water is all that is needed to keep them smart and new looking.

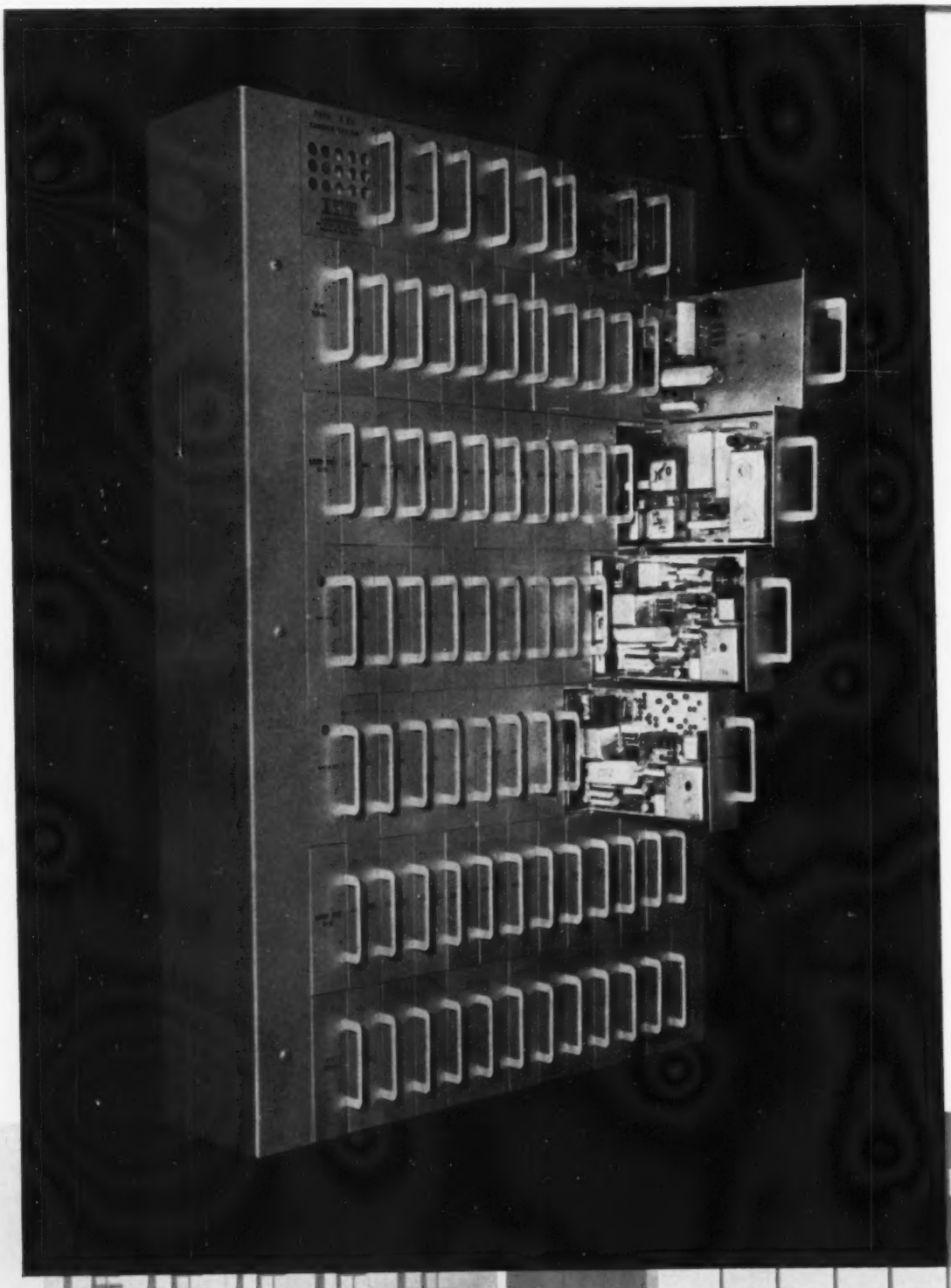
"People like the lighting in Alcoa booths," says Mr. Schultz. "Excellent lighting and sturdy construction give a feeling of safety at night!"

Your Guide to the Best in Aluminum Value

ALCOA ALUMINUM
ALUMINUM COMPANY OF AMERICA

For exciting drama watch "Alcoa Presents" every Tuesday, ABC-TV, and the Emmy Award winning "Alcoa Theatre" alternate Mondays, NBC-TV

TELEPHONE
TELEPHONE



Meets toll standards at low cost!

Kellogg's NEW K-24 SHORT HAUL cable carrier

Kellogg's new K-24 short haul cable carrier meets toll standards at low cost through using transistors and printed wiring. Availability of regulating repeaters assure uniform transmission. Frequency staggering and novel circuits result in low noise and good performance.

Here are some reasons why the K-24 belongs in your modernization and growth programs:

- ☑ The K-24 has been specifically designed for economical application between 5 and 20 miles.
- ☑ Test installations throughout the country under service conditions prove the efficiency, high quality and economy of K-24 systems.
- ☑ The K-24 can increase the capacity of existing cable manyfold, deferring substantial investment for new cable, conduit or pole lines to care for trunk circuit growth.

Kellogg's K-24 incorporates the most modern principles of electronic design. It is *completely transistorized*, assuring a long trouble-free life. Units are of plug-in, modular construction for ease of replacement, expansion, or modification of the initial installation.

The K-24 is miniaturized and compact: it takes up 31½" on a 19" rack; 96 channels may be mounted in a single 11-foot bay.

A wide range of signalling options for most exchange applications, including that used between panel and crossbar offices, can be provided with the K-24.

For complete technical details on this latest achievement of Kellogg-ITT research, write Kellogg's Carrier Division at 2912 Wake Forest Road, Raleigh, North Carolina.

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois.
Communications Division of International Telephone and Telegraph Corporation.

Regional Offices and Warehouses:
CALIFORNIA: 23 Broderick Road, Burlingame, Calif., OXford 7-5780.
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TEXAS: 1339 Motor St., Dallas 7, Texas, RIverside 7-5191.
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NEW!
LEICH
Subsidiary of GENERAL TELEPHONE & ELECTRONICS
GENERAL SYSTEM

NEW!

Leich's L55 Floor-type PBX

Here's the switchboard that increases your PBX sales, and saves you money, too. Leich's L55 PBX is not only attractive, durable, and easy-to-operate, but also reduces your maintenance and expansion costs. What's more, it gives your larger subscribers all the service features that they most desire.

Formica-type Cabinets

Leich's formica-type cabinets are non-flammable and stain-resistant. They're available in standard finishes of mahogany, walnut, and blond ash to complement your subscribers' furnishings. An unfinished bay poplar plywood cabinet is available on request.

Unique Keyboard Arrangement

A simplified keyboard arrangement lets the operator handle calls easily, and gives her more room to perform other office duties. Both push-button ringing keys and twist-push type talk keys are conveniently located in a sloping position above the writing shelf. Talk keys serve as night answering keys by simply pushing them in.

Jack-in Circuits

Jack-in cord circuits, operator's circuit, and central office trunks let you add, remove or service equipment quickly and economically. Leich's new cord circuits also allow for maximum range. There's less need for long line relay equipment at the PBX to handle off-premises extensions.

Two Sizes Available from Stock

Two basic models, the L55-A3 and L55-B4, are available from stock, and can be delivered within 30 days. Additional lines, trunks and cords may be ordered up to capacity, plus other service features, such as conference and tie trunks.

MODEL L55-A3			MODEL L55-B4	
Wired	Equipped		Wired	Equipped
60	30	Station Lines	80*	40
14	6	C. O. Trunks	14	8
15	8	Cords	15	10
1	1	Operator's Circuit	1	1

*Capacity: 120 lines.

Write today for more information.

LEICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

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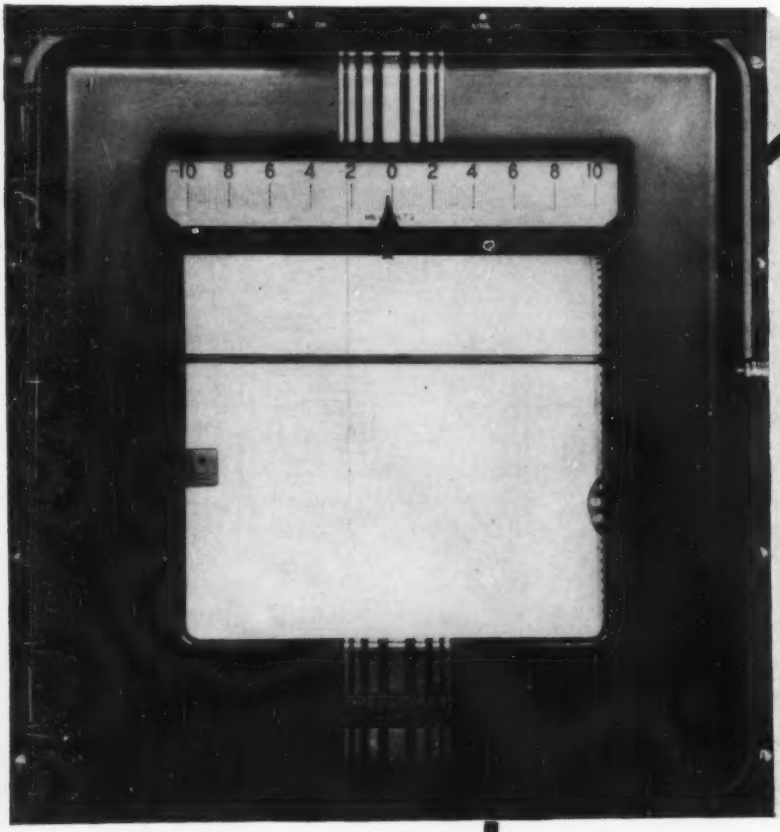
manufacturers of telephones, switchboards and related apparatus since 1907

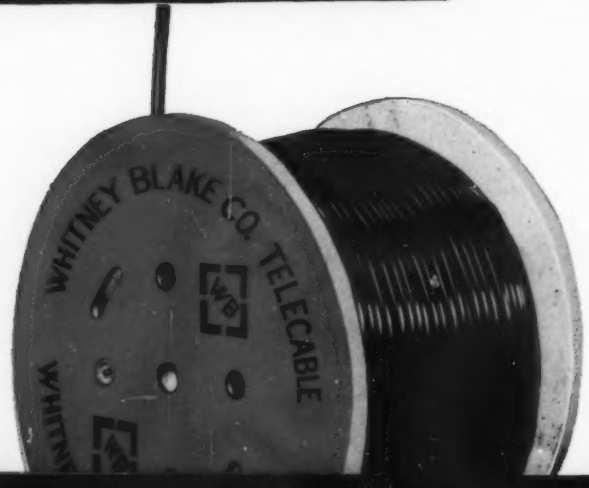
100% AUTOMATIC ASSURES *that all conductors in every length of Whitney Blake Telecable® leave the factory free from . . .*



- OPENS
- GROUNDS
- CROSSES
- SHORT CIRCUITS

All data including the resistance of each conductor is permanently recorded on strip charts.

Only the TELETESTER provides this complete inspection.



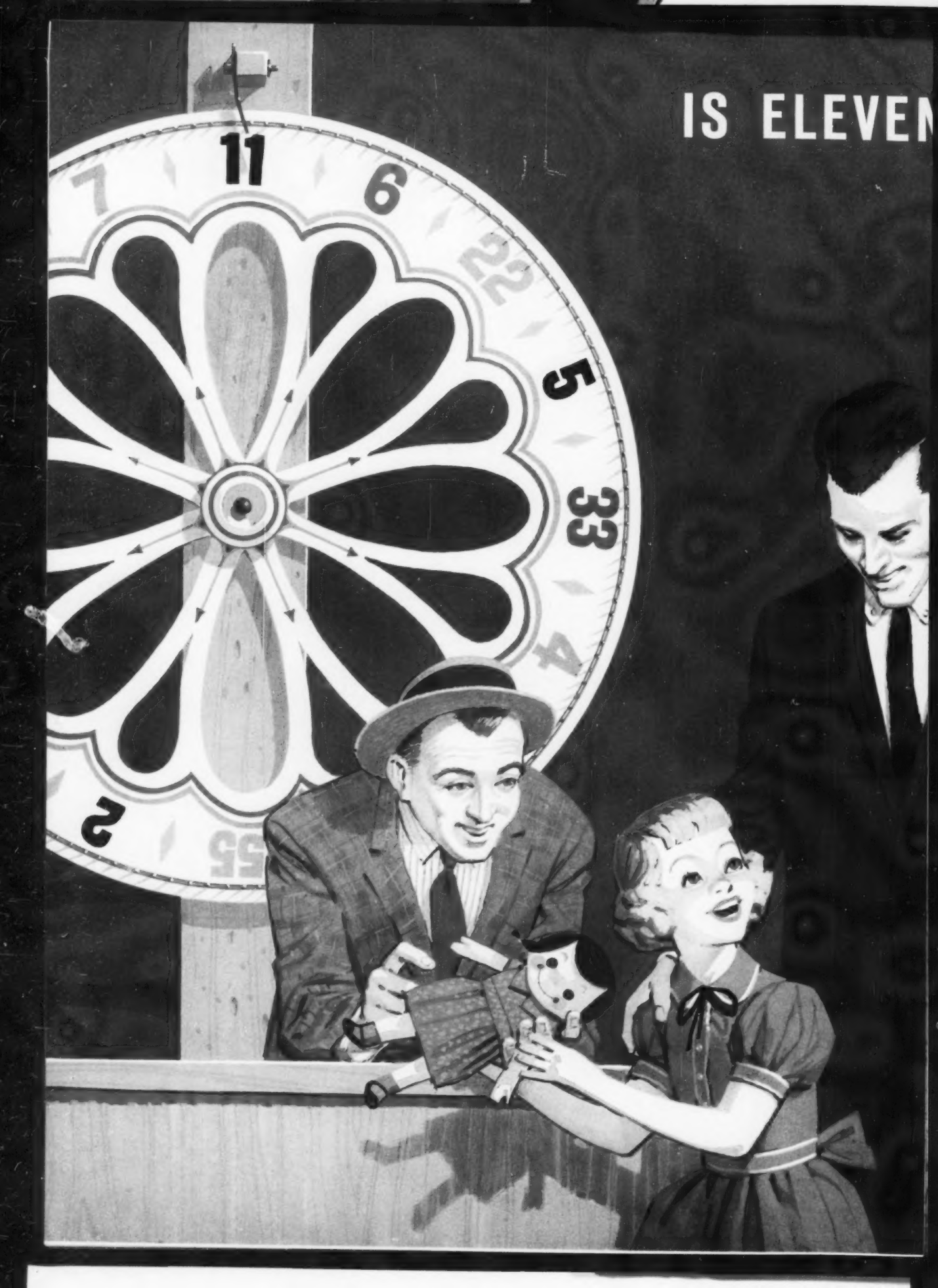
TESTING

WHITNEY BLAKE CO.

NEW HAVEN 14, CONNECTICUT
Telephone: CHestnut 8-5515 TWX: NH 84

RELIABILITY — A PRODUCT OF THE ADVANCED TESTING TECHNIQUE AT WHITNEY BLAKE.

The Whitney Blake Teletester


IS ELEVEN
11
6
22
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33
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2

YOUR LUCKY NUMBER TOO?

yes...with North NX-2 crossbar for smaller exchanges

But there's no gamble involved, as you'll discover when you check the "Big 11" advantages of NORTH NX-2 CROSSBAR.

1. New Modular Design—permits easy and inexpensive expansion in 30 line multiples.

2. New Transistorized Trans-O-Ring Number Group—offers the advantage of permanent directory number assignment with no restriction. Single wire control affords full flexibility in relocating lines. Only one wire to move in the Trans-O-Ring number group to relocate any number.

3. Frequency Per Terminal with Terminal Per Station.

4. Traffic Load Distribution Flexibility—only with the crossbar number group can any subscriber number be assigned to any connector terminal. This allows full flexibility in distributing traffic loads **without changing numbers.**

5. 100% Automatic Intercept—for both toll and local calls.

6. Register-Sender With Translation Optional—for tandem offices wherever alternate coding or routing is required or desirable.

7. 100% Line Lock-Out—standard on all North crossbar switchboards.

8. Consecutive Number Assignments for PBX Lines Unnecessary—eliminates numbered line reserve problems.

9. Automatic Reverting Call Identification—requires no special code or operator intercept. Switching equipment automatically recognizes this call.

10. Minimum Maintenance—virtually no moving parts to wear or service. Crossbar eliminates the heavy mechanical wear that is inherent in motor-driven or stepping-type switches.

11. Designed For Today—And Tomorrow—accommodates all modern equipment including toll ticketing and multi-frequency signaling on toll as well as local lines. Adaptable to the electronic equipment of the future.

Whether you're planning expansion or cutover, North NX-2 means unparalleled small office (30 to 3,000 lines) efficiency.

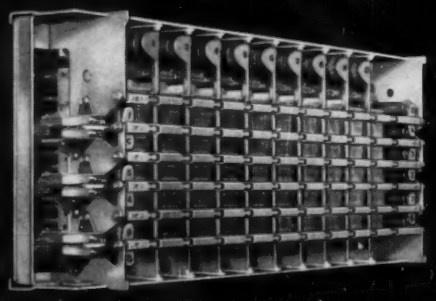
For full details, write, wire or phone

THE DYNAMIC FORCE IN THE TELEPHONE INDUSTRY

NORTH ELECTRIC COMPANY

Galion, Ohio

NORTH



60-T-5

When **M** STRANDS go up

your costs come down

It's true economy to install guys and messengers made of Copperweld Type M Strand. There are no maintenance costs—no replacement costs. Because Type M Strand is non-rusting, you eliminate, once and for all, the problems and expense caused by the deterioration and failure of rust-weakened guys and messengers.

Type M Strand gives you the same long life and freedom from maintenance that has distinguished Copperweld Products for over 40 years. Each wire is permanently protected against corrosion by a heavy copper sheath inseparably molten-welded to an alloy steel core. And, because of the molten-weld, the copper will not crack, flake or peel. Easy to handle—easy to install—Type M Strand can be readily bent, served, moused or clamped.

You can see that Type M Strand offers economies you can't afford to pass up. Put this strand up and prove it for yourself.

COPPERWELD STEEL COMPANY

WIRE AND CABLE DIVISION **Glassport, Pa.**

For Export: COPPERWELD STEEL INTERNATIONAL COMPANY, New York

Copperweld® TYPE M™ STRAND

FOR GUYS AND MESSENGERS

Lenkurt datatel

HAS EVERYTHING...

INCLUDING NEW ADVANCES IN RELIABILITY AND FLEXIBILITY

THE PTW POLAR RELAY, for instance...

Lenkurt Type 23A Datatel telegraph carrier equipment incorporates advanced design features that provide wider latitudes of operation.

For instance, each 23A loop unit employs a PTW polar receiving relay that has a number of advantages over electronic keyers. Its use permits various polar arrangements without requiring an external repeater; it allows back-to-back operation, either half- or full-duplex; and because the relay introduces no voltage drop, there are fewer restrictions on loop length.

In addition, the PTW polar relay has a significantly superior maintenance-free life. It has 3/16" tungsten carbide contacts that are immune from pitting and contact build-up, and features an Alnico permanent magnet that retains its flux indefinitely.

Type 23A has the added advantage of being fully transistorized. Dissipation is only 2.5 watts per channel, and the equipment can be operated directly from any 48-volt d.c. source. A multimeter and VTVM are normally the only test instruments required for servicing.

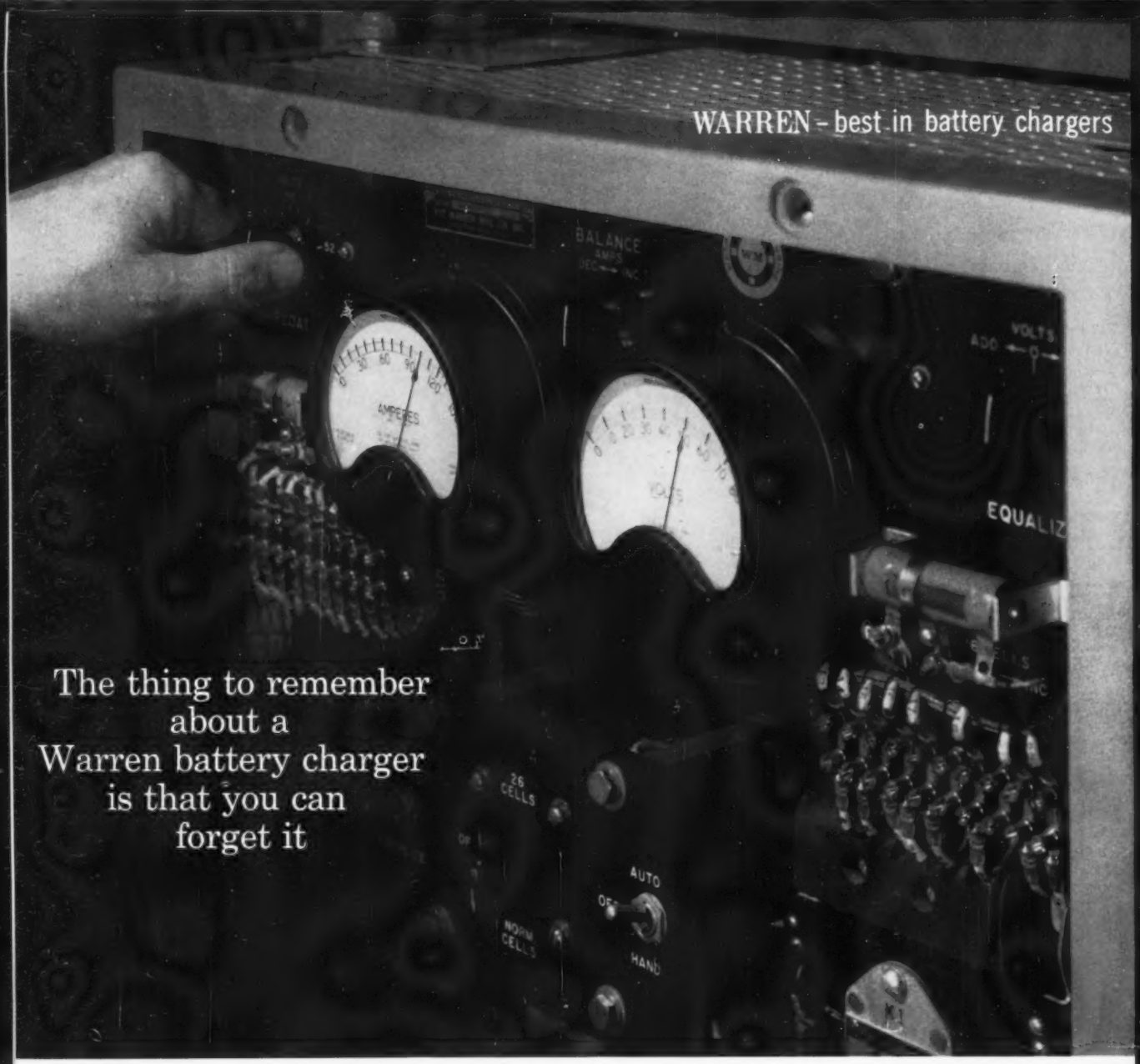
For the full story on Lenkurt Datatel or companion equipment, call your Automatic Electric representative, or write Mr. T. B. Collins, Director, Carrier & Radio Sales, Automatic Electric Sales Corporation, Northlake, Illinois.

ALL YOUR COMMUNICATIONS NEEDS FROM ONE DEPENDABLE SOURCE

AUTOMATIC ELECTRIC GENERAL SYSTEM

Subsidiary of

GENERAL TELEPHONE & ELECTRONICS



The thing to remember about a Warren battery charger is that you can forget it

What we're talking about is *maintenance*. With Warren TFR's in your telephone exchange, there's less of it. A lot less.

Take the question of voltage adjustment, for instance.

With a Warren TFR of proper rating (and *only* with a Warren TFR) you can adjust voltage with consummate precision simply by turning a knob, conveniently located at eye level.

And then — you can forget it.

When we say "forget it" we mean just that. The reading won't change, no matter what.

Repeat — the reading won't change until you want to readjust for another voltage setting. Period.

The reason: Warren's supremely efficient, transistorized circuitry, featuring: a hermetically sealed Zener reference diode for precision voltage reference; germanium power transistors for simplicity and reliability; and *silicon* power rectifiers which positively refuse to age. You never have to adjust for aging — not next week, or next month, or next year, for all of that.

Less maintenance, superior performance — and in a lot less space.

Let us send you full information.

Compact, transistorized, field-proven Warren TFR's are available in a full range of current ratings in 24, 48, and 130 volt models. Illustrated: 48 TFR 100 with knobs safely located behind cover

WARREN MANUFACTURING WM

THE WARREN MFG. COMPANY, INC.

LITTLETON, MASSACHUSETTS - TEL. HUnter 6-3511

FIRST IN TRANSISTOR PRODUCTS FOR THE TELEPHONE INDUSTRY — SOLD THROUGH LEADING TELEPHONE EQUIPMENT MANUFACTURERS

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR
AND EDITOR, PUBLIC UTILITIES FORTNIGHTLY

Discusses public relations ramifications of wire tapping. Points out there is far more electronic eavesdropping going on via "bugs" of various kinds than there is wire tapping, which is outmoded. Bugged Spike Case shows legal climate.

TELEPHONE PEOPLE must get awfully tired of hearing about wire tapping and all the unfavorable publicity that goes along with it. After all it is a relatively rare and freakish occurrence in workaday telephone operations, wherein more pressing and important matters demand so much more attention. So, the tendency is to ignore it or sweep it under the rug. After all, the controversy, where there is a controversy, is usually primarily between public enforcement officials and somebody suspected of wrong-doing. Why should the telephone company, as such, worry too much about whether somebody's line got bugged—legally or otherwise? Just as long as the company or its employes are not involved, the temptation is great for telephone management to let such cases blow over.

The only trouble with that kind of reasoning, which can be said to be both practical and sound to some extent, is that it fails to take into account the enormous concealed public relations factor. This comes into play because the very integrity of telephone service, the very basis of public confidence upon which the service was founded, expanded and on account of which it has flourished in this nation as in no other, is brought under a shadow.

The confidential character of telephone communications, the privacy of personal conversation, is something the American people have been encouraged to rely upon, if not take for granted. In no other nation in the world, most of which is served by government-owned telephone monopolies and many dominated by state police, has the telephone subscriber been given so much reason to depend on the privacy of his telephone service as in the United States. This is an industry asset to be treasured.

The public relations factor may be difficult to recognize in such situations because it shows up in a negative way—with the telephone company seemingly on the defensive. We usually think of public relations effort of any kind as a positive or plus factor. That is the normal promotional approach—to take affirmative steps to make friends and spread good will for the company.

But in the case of wire tapping, real or spurious, the telephone company can suddenly but inescapably be thrown upon the defensive. Everything may be going along just fine and dandy and then the company hits this iceberg.

Out of nowhere comes this or that silly case of somebody—police, private eye, or voluntary snooper—bugging a subscriber's line. The case hits the newspapers, and right away the company's reservoir of public good will and confidence springs a leak. Unless checked, a considerable amount of that public confidence and good will could quietly drain away without being noticed especially.

Long after the particular police case, or divorce case, or whatever it was, has been forgotten there may linger in the back of the minds of thousands of subscribers that nagging thought: "Could this happen to me?" In rare instances the nagging thought may harden into a suspicion, if not a conviction, that it *is* happening to them personally.

Every telephone company operation of any size at all turns up instances of excited complainants who insist that their lines are tapped. One complaint desk operator got a call like that from a man who was almost hysterical with apprehension. But the subscriber could scarcely be heard above a banging noise as if a pile-driver were working next to the telephone. "I'm sorry, sir, but I can't hear you very well on account of that noise."

The subscriber's voice sank even lower, as if that would avoid any one overhearing. "That's *me* making the noise, lady. My brother told me that if you keep banging on the phone very hard with a pencil while you are talking it makes it hard to overhear."

Countless other stories, and more amusing ones, are told about people who get themselves worked up into such a state. But all the company can do is to send out a line inspector. In one case out of a thousand it may develop that the line is tapped. Even so, all the company can do is to remove the tap, and tell the subscriber about it. He has to take any further steps, if any. The company cannot promise that the tap will not be right back on the line, maybe at another place, within 24 hours.

These strictly defensive measures, necessary as they are, may not be enough to overcome the original suspicion of the subscriber. In some cases he is still unconvinced. In other cases he wants to know how and why his line cannot be guaranteed, fool-proof and rogue-proof, against unauthorized interference. And it is no answer to note that some of these people must really have something to conceal, or that others are neurotic if not downright paranoic.

The plain fact is that a single story about wire tapping, played up in the newspapers, and regardless of whether

the wire tapping actually took place, can produce thousands of echoes in the memories of multitudes who will not remember anything else about the case.

What's more, the public relations hazard about wire tapping, or any other form of unauthorized interception of conversation, is bound to get more difficult to cope with as telephone techniques pursue the obvious trend from conventional wire circuits of the past to the variety of radio circuits of the future. Of course, this gets into another phase of the problem, where the interception is not confined to the subscriber's premises. But by the same token, the whole tiresome and vexing question moves that much closer to the telephone company's own back yard.

It seems impossible to assure a lot of people that such devices as scrambling, mixed circuit relays and other routine procedures make the interception of a radio relayed telephone conversation far more difficult than tapping the line right on the customer's home grounds. This writer was unable to convince several reasonably intelligent newspaper correspondents, for example, that the recent Navy demonstration of radio relay via the moon, from Hawaii to Maryland, was not available to anyone on earth, friend or foe, who wanted to take the trouble to catch the signals. Yours truly argued the point all the way back in the bus from Cheltenham, Md. to the national Press Club in Washington, but to no avail.

The tantalizing part about this problem is that any concerted effort—like a publicity campaign, could prove self-defeating. It could be somewhat like picking a pimple. It could stir up an epidemic of indignant complaints by subscribers who have suddenly become positive that an obscure toll call about the sale of hogs had fallen into the ears of business competitors.

No, the subject must be approached tactfully and sincerely. Without even mentioning wire tapping, the rapid recent development of electronic eavesdropping equipment should provide a welcome divertisement. Perhaps the public can be persuaded, by inference, that wire tapping is now clumsy old-fashioned stuff, and the folks would be better advised to look around and see what else is available and more effective in the way of unauthorized snooping, aside from all telephone conversation.

Then too, the gradual elimination of overloaded party lines could help a lot to ease the tension at the local level.

This preoccupation with secrecy of communications is only natural. Privacy is one of our Civil Rights guaranteed by the Constitution. Then too, don't we all have our little secrets—whether it be a teen-ager's love spat or poor old Dad's five-dollar attempt to beat the ponies at the Laurel racetrack?

Even if we had nothing whatever to hide, we all would still share the feeling that we are entitled to have the confidential nature of our personal communications safeguarded. We want them safeguarded by law—which they are, under the Federal Communications Act. And we also want them safeguarded by the public utility charged with the service responsibility. That is what puts the telephone company right on the spot.

The Case of the Bugged Spike

This writer has mentioned the tactical possibilities of a divertisment—a positive effort to assure the public that their private conversations are more safely guarded over company facilities than even in their own homes—when they are not even using the telephone. Admittedly this does not solve the public relations problem, but it could help to remove some of the load from the back of the telephone company—where it had no right to be in the first place.

Obviously the telephone company cannot *guarantee* anything about the secrecy of conversations. It would be grand if it could; but it just cannot, as a practical matter. For instance, the telephone company cannot physically police lines on or near the subscriber's premises 24 hours a day—sometimes against the subscriber's own family or relatives living in the same house or apartment.

As to tampering between the premises and the switchboard, or thereafter, the company can make a persuasive case to the effect that it would take a high-priced expert, with a lot of time and luck, to intercept a particular line, especially since dial conversion. But even though the chance runs one to a thousand or one to ten thousand, the company cannot say positively that such a thing cannot happen.

So what *can* the company say? Well it is a fact that anyone so interested in a particular person's conversation as to spend a lot of time and money on technical prying would be far better advised to invest in a concealed bug or microphone than monkeying around with telephone wires. And it is also a fact, which the laggard TV murder and detective programs have not yet caught up with, that *there is far more unauthorized interception of communications going on in this country today via electronic eavesdropping equipment with no physical connection or contact with telephone facilities than by the outmoded wire tapping process.*

Trouble is here that the TV script writers are apparently in need of a briefing on what the smart, successful up-to-date gangster of today does to earn his dirty dollars. They have gotten into the rut of making about every third so-called "plot" hang on the kind of heavy footed wire-tap job that went out with Al Capone. Can't something be done about this—in the interest of credible entertainment if nothing else? Think of the millions of impressionable minds, young and old, who get this nightly dose of a widespread, mythical wire-tapping practice, right out of their own little idiot boxes.

The modern bug is more to be feared by the private citizen precisely because it is not limited to telephone conversation. It can listen in and record all kinds of conversations and sounds, 24 hours a day. Finally, the bug may be used in such a way as to be perfectly legal; whereas unauthorized wire tapping is always illegal and subject to fines and imprisonment.

This brings us to the interesting case of the Bugged Spike—decided by the U. S. Circuit Court of Appeals for the District of Columbia on Feb. 4. The legal justification for the use of evidence obtained by a bug or hidden microphone goes way back to 1928, before microphones were used very much outside of radio broadcasting. It was in that year that the U. S. Supreme Court decided the case of Olmsted vs. United States.

In that case, evidence leading to the conviction of a person had been obtained by simple eavesdropping on the part of alert witnesses. When it was objected that the witnesses had picked up a private conversation not intended for their ears, the court rejected the contention that such conversations are protected by the Fourth Amendment. The conviction was upheld on appeal.

Furthermore, in this Olmsted case, the court pointed out that the protection afforded by the Fourth Amendment (against unreasonable search and seizure) extends only to physical things, specifically "persons, houses, papers and effects."

An oral conversation is not a physical thing. Therefore, if an enforcement officer with long ears happens to be lurking beneath an open window, or on the street or some other public place, and hears enough evidence to start prosecution, the defendant has only himself to blame for talking so loudly or indiscreetly.

The Olmsted case had its limitations. You could not break into a suspect's home, or hide in his garage or car to listen for incriminating statements. The listening witness had to show that he had a right to be where

REA Approves Five Loans

Loans to bring new or improved telephone service to 3,787 subscribers in six states were approved during the week of Jan. 25 by the Rural Electrification Administration as follows:

South Hardin Rural Telephone Cooperative, Union, Ia.; $427,000; Jan. 26.

This loan will aid in improving service for 779 subscribers and in furnishing initial service for 75 subscribers.

The new borrower now furnishes manual service to the existing subscribers through central offices at New Providence, Union and Whitten.

New construction scheduled includes dial offices at New Providence and Union. Whitten community will be served through these two exchanges. A portion of this loan will be used to refinance the borrower's existing indebtedness.

Jesse Broer is president of the South Hardin cooperative.

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Twin Valley-Ulen Telephone Co., Twin Valley, Minn.; $155,000; Jan. 26.

These funds will help the borrower furnish initial service to 185 subscribers and improve service for 44 subscribers. The subscribers who will receive improved service now are provided manual service by the Ogema Telephone Co. and the Chippewa Telephone Co. Both companies plan to abandon their facilities and take service with the borrower.

A new dial central office will be constructed at Ogema to serve that community. The Nay-Tah-Waush and Twin Lakes areas, now served by the Chippewa company, will be served from the borrower's Waubun exchange.

REA loans to this borrower now total $719,000 and will benefit 1,551 subscribers. The system, when complete, will consist of six exchanges, of which five now furnish dial service to approximately 1,100 subscribers.

•

Cohassett Beach Telephone Co., Aberdeen, Wash.; $75,000; Jan. 26.

Funds from this loan will aid in furnishing initial service to 52 new subscribers, in providing for an increase in the proportion of private and semi-private lines, and in completing the authorized system.

REA loans to this borrower now total $368,000 which will aid in bringing new and improved service to 914 subscribers. The completed system will consist of two exchanges, both of which are now furnishing dial service to approximately 730 subscribers.

•

Inland Telephone Co., 205 West Springfield Ave., Champaign, Ill.; $146,000; Jan. 28.

The company plans to use this loan to furnish initial service to 13 subscribers; provide for an increase in the proportion of private and semi-private lines; and to complete the authorized system.

REA loans approved to the Inland company now total $1,209,000 which will help to provide new and improved service to 2,447 subscribers. The completed system will consist of five exchanges, three of which are now furnishing dial service to approximately 1,460 subscribers.

•

West Carolina Rural Telephone Cooperative, Abbeville, S. C.; $650,000; Jan. 28.

Funds will be used to finance initial service for 1,354 subscribers and to provide for an increase in the proportion of private and semiprivate lines. The new subscribers will be located in four of the borrower's present exchanges and in a new exchange area to be created at Calhoun Falls-Rural. In order to provide the additional service, the borrower plans to construct a new dial office at Calhoun Falls-Rural.

This cooperative has now received REA loans totaling $1,590,000 which will help make possible new and improved service for 3,012 subscribers. Five of the proposed six exchanges now furnish dial service to about 1,500 subscribers.

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Heins Telephone Co., Sanford, N. C.; $737,000; Jan. 29.

Funds from this loan will help to finance initial service for 1,285 subscribers.

The new subscribers are located primarily in the borrower's present Sanford and Jonesboro exchange areas. In order to meet this demand for additional service, the company proposes to enlarge the Sanford building and install new and larger dial facilities. The Jonesboro exchange will then be eliminated and that community served from the expanded Sanford exchange.

REA loans to this borrower now total $2,231,000 which will enable it to bring new and improved service to 6,673 subscribers. The completed system will consist of exchanges at Broadway, Olivia, and Sanford. The company now furnishes dial service to some 6,000 subscribers.

he was, when he heard what he did (or at least as much right as anyone else). But he could not extend his point of interception—by microphone or otherwise—beyond the point of trespassing on the private property of the suspect. Just the same, the Olmsted case gave enforcement officials quite an effective weapon of discovery. Microphones could be placed just *outside* of doors, or in other likely but legitimate places, and the resulting evidence could be used. Convictions obtained that way were upheld.

With the advent of the induction coil, the transistor, and the miniature microphone and recorder, the Olmsted case opened up new avenues. An informer, socially acceptable to the suspect, could be sent into his home wired like a transmission set. The informer's conversation with the suspect would then be received by waiting police with their pencils and notebooks poised. Miniature recorders, concealed in briefcases or on the person of the informer, might gain lawful access to some place where incriminating conversations took place. Prosecutions based on such evidence have likewise been sustained.

The case of the bugged spike would seem to be the utmost extension of

(Continued on page 45)

Transistors in Telephony

By ARTHUR L. ALBERT*

Part 1

THIS series of five articles will consider semiconductor devices, including rectifiers and transistors. The articles will be for persons in the telephone industry who are not well acquainted with semiconductor devices.

The explanations given, and the illustrations used, will be simplified. A complete study of transistor operation is rather complicated. However, when certain details are omitted, an explanation of transistor operation is not too involved.

Thus, in these articles, the discussions will be oversimplified. A practical approach such as this has been used for years in dealing with vacuum tubes. For example, it is said that a hot cathode emits electrons, but *exactly* what happens?

Transistors are about 12 years old. The discovery of transistor action was by Brattain and Bardeen at Bell Telephone Laboratories. The early development of the transistor principle by these two scientists, and by Shockley and others, already has proved to be of outstanding importance.

Historically, point-contact transistors were developed before junction types. However, because of their almost exclusive use, only junction transistors will be considered in these articles.

Semiconductors

Why are transistors made from semiconducting materials such as germanium and silicon? One reason is this: If a perfectly conducting material were used, such a transistor would be a "dead short," and no voltage could exist between transistor electrodes, since E=IR. If R=O, then E must be zero. By contrast, if a perfect insulator were used to make a transistor, the device would be an "open," and no current could flow between electrodes.

Basically, a transistor amplifier controls the flow of electric energy from a source such as a battery. To control energy flow, signal currents must flow into, and out of, electrodes, and voltages must exist between these electrodes. Semiconducting materials must, therefore, be used for transistors.

But, why must germanium and silicon be used? An answer is that they have atomic, electrical, and mechanical properties that make them suitable for use in transistors. Other substances theoretically could be used, and may be used in the future. At present most transistors are made of germanium; hence, only germanium need be considered. Silicon transistors have better characteristics for some purposes, particularly at high temperatures. However, the atomic structure of silicon is so similar to that of germanium that only germanium, and semiconductor devices made from germanium, will be treated in the discussions that follow.

Atomic Structure of Germanium

The germanium atom is composed of a central nucleus surrounded by 32 separate electrons. These electrons can exist only in certain energy bands, or levels, about the central nucleus. This may be pictured by imagining that the 32 electrons exist only in certain "altitude strata" above the nucleus. Electrons in the band, or altitude stratum, farthest away from the nucleus have the greatest "elevation" and are at an energy level greater than electrons nearer the nucleus.

In germanium there are four individual electrons in the outermost band called the valence band. Because they are (relatively speaking) far away from the nucleus, the electron-charge forces that hold these four electrons to the nucleus are weak.

At absolute zero (–273°C) pure germanium is a perfect insulator because all the 32 electrons are held at various levels about the nucleus; hence, there are no electrons free to migrate and carry current as in a metal like copper.

At any temperature, such as room temperature, a piece of germanium would be "warmed," and hence would be receiving energy from external sources. This received energy will cause thermal agitation, or vibrations, of the germanium atoms. This added energy will enable some outer electrons to break away and become free electrons. Then, the germanium will become a semiconductor.

Germanium Crystals

A piece of pure germanium consists of one or more crystals. In each crystal the germanium atoms are arranged in the same uniform pattern. Non-uniformities, or discontinuities, exist at the boundary between crystals. Single crystals of germanium are used for making transistors so that no discontinuities will exist within the transistor material; that is, no discontinuities will exist except those that intentionally are introduced as will be explained later.

Since a crystal of germanium has three dimensions, depicting it is difficult. However, one plane passing through a germanium crystal would have in it atoms arranged as in *Fig. 1*. Light lines have been drawn between each atom. Of course, there are no

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such physical connections within a crystal. These light lines represent electric bonds, or electric forces, that exist between atoms.

The electric forces, or bonds, are caused by the four electrons at the outer (or upper) level. Because these four outer electrons of a given atom are *not* tightly bound to the parent nucleus, some sharing of outer electrons will occur between adjacent germanium atoms. Because of this momentary sharing of electrons, and interlinking of electron paths among adjacent atoms, the electric bonds exist.

The atomic bonds would exist at *absolute zero*, and in a sense would hold a piece of germanium together. However, the electrons always would be associated with one atom or with another, and would not be free electrons available for electric current flow. As previously mentioned, at absolute zero pure germanium would be a perfect insulator.

However, if heated to room temperature, for example, atomic thermal agitation would occur, and, as a result, some of the outer electrons would be freed from all atomic connections. Hence, at room temperature current carriers *do* exist, and pure germanium is *not* a perfect insulator, but has a resistivity of about 60 ohms.

Holes in a Germanium Crystal

As has been explained, pure germanium at room temperature will carry current, but the current would flow equally well in either direction if an external voltage were applied. Furthermore, no electrodes as yet exist within the germanium to control current flow. Electrodes are a necessity if amplification by transistor action is to be made possible. As an example, the control grid of a vacuum-tube amplifier regulates the flow of electrons from cathode to plate. In a sense, the control grid is a discontinuity in the electron path from cathode to plate.

In effect, control electrodes are *built* into the germanium crystal to be used for making transistors. These electrodes are *not* separate structures such as a grid, or mesh of wire. Instead, the necessary control features are provided by altering the atomic structure of the germanium crystal. This is done when the germanium crystal is made.

A typical single crystal of germanium may be about 6 inches long, and 1 inch in diameter. To grow such a crystal, a seed crystal is lowered into molten germanium, and then is withdrawn under controlled conditions. As this is done, the germanium crystal grows adjacent to the molten surface.

As a crystal slowly is being withdrawn, and grown, suppose that at a

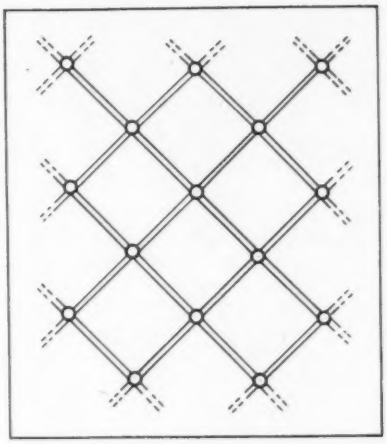

Fig. 1. Arrangement of germanium atoms in one plane passing through a germanium crystal. The circles represent atoms. The lines represent the electric forces, or bonds, between atoms.

given time some aluminum atoms are introduced into (and throughout) the molten germanium. Aluminum atoms are similar to germanium atoms, and readily enter the crystal being grown. Hence, a layer of the final grown crystal will contain both germanium and aluminum atoms. However, aluminum atoms have only three outer electrons, and hence in the final grown crystal at locations of aluminum atoms discontinuities will exist.

Because aluminum atoms have only three outer electrons, incomplete electric bonds will exist at certain locations in the crystal. An incomplete electric bond is called a hole.

A hole is a location in a crystal where an electron may be, but is not. A hole offers an attractive site to a nearby electron. The hole, in effect,

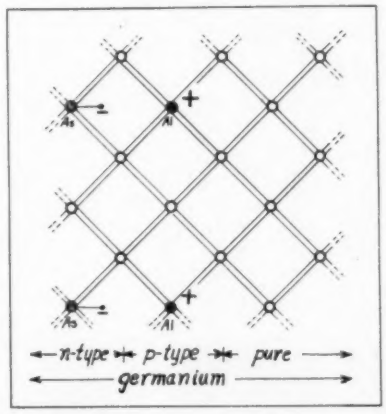

Fig. 2. Arrangement of atoms in a germanium crystal containing aluminum atoms (Al) and arsenic atoms (As) which were added when the crystal was grown. Near the aluminum atoms holes exist, and near the arsenic atoms excess electrons will exist.

may be thought of as positively charged as *Fig. 2* indicates. Hence, an outer electron, that is but loosely attached to an adjacent germanium atom, may "fall into" the hole.

If this occurs, a hole then will exist in the germanium atom which gave up the electron. The movement, or migration, of a hole in a crystal may be thought of as a step-by-step, atom-to-atom, process. Because the holes act like positive electric charges, the part of a germanium crystal which contains more holes than free electrons is called p-type germanium.

Free Electrons in a Germanium Crystal

It was stated that free electrons will exist in pure germanium at room temperature making the germanium a semiconductor. To provide distinct discontinuities for control purposes, in a crystal, layers of germanium are grown that are different from pure germanium. As just explained, a p-type layer containing an excess of holes may be grown.

Another type of germanium layer is grown. This layer is made to have an excess of electrons, instead of an excess of holes. Arsenic atoms may be used to give a layer in a germanium crystal an excess of electrons.

An arsenic atom has five outer electrons. If sufficient arsenic atoms are introduced throughout the molten germanium, then in the corresponding region of the grown crystal, arsenic atoms will exist. Because arsenic atoms have one electron more than the germanium crystal structure requires, an electron is left over and this excess electron is free, at room temperature, to move about between atoms.

A free electron may pass between atoms in traveling through the crystal structure. A free electron need not travel in a step-by-step manner between atoms. The part of the germanium crystal containing the excess of negative electrons is called n-type germanium. This also is shown in *Fig. 2*.

It has been shown that both p-type germanium and n-type germanium may be produced within the crystal structure during the growing process. Therefore, p-n, and n-p junctions may be caused to exist within the germanium crystal. These junctions are crystal discontinuities and may be used to control current flow. Junctions may be formed by other means, such as by diffusing the proper metal into germanium at high temperature.

The next article of this series will discuss the electrical nature of the junctions, and will explain how junctions control current flow.

We Have a Good Reputation

Let's Keep It

By GILBERT R. BRACKETT

THE TELEPHONE is a versatile instrument. Through its medium, emergencies are overcome by split-second, decisive thinking. It can promote good-will for the individual or for the public-at-large. It can reduce fear to peace of mind. It can turn sorrow into happiness. It can change gloom to sunshine. It can bring riches in the material things of life or amity for the soul. There are few limits to its accomplishments or to its radius. It can put one in touch with his next door neighbor or with someone most anywhere in the world.

We have probably often thought of a large city suddenly devoid of telephone service, and the chaos that would result if such a thing should happen. Most people could probably do without the every-day little personal calls they make to friends, but what about the calls to the doctor, the police, the fire department, the ambulance and the thousand and one other calls that spell emergencies?

PBX Attendant Important

Yet we don't always treat this wonderful heritage with the respect due it. Some people do not man the telephone doorway into their home or business with the proper delicacy or decorum, though they must know that every friend of their home or every client of their business will at sometime ask permission to enter through this telephone portal.

In a business establishment, the most important person in the organization could be the telephone attendant. This person has a grave responsibility as the tyler in charge of the telephone door. She has a rare opportunity to win friends and much business for her company, or she can, through indifference, become the mainspring for a surge of unfavorable impressions that could not be overcome by the most astute advertising.

The telephone attendant should be chosen carefully. She should be a diplomat, a canny committee of one to act as a good-will ambassador. Through her the person who is calling will form some opinion of the company and that opinion you would want to be tops.

A telephone attendant should be an object lesson to her co-workers and to her company's business friends. She must be sincere in her desire to be helpful and efficient because shallowness will not deceive the most naive. She must remain calm under the most trying circumstances and be able to apply the soft, persuasive answer that "turneth away wrath."

Careless Manners Hurt

Careless telephone manners often start irritation cycles which could add up to a disappointing day for everybody concerned. The telephone attendant who answers the telephone gruffly or irritably, because she is cross or disturbed, could cause that person to deal harshly with the next individual he contacts. Word upon word the alienation could mount until the day is ruined for many people. A tiny thought given to what was said could have made the day bright and sunny for everyone, instead of gloomy.

"A firm's reputation for good business methods often is affected by the way the telephone is used. If used properly, it will add popularity and bring in additional sales . . ."

In this day of opportunities, some businesses have grown to many times the size they enjoyed prior to World War II. Advancement in science has created new industries which have expanded into huge enterprises. The telephone industry has responded remarkably well in keeping in step with such an abnormal development.

In the rush and excitement of mushrooming industry, minor details of customer treatment have been put aside or trusted to inexperienced assistants who, themselves, are so harried by the demands of their office that they have failed to appreciate the importance of the employe's telephone conduct.

Telephone Company Obligated

The alert office executive usually discusses his communication problems not only with his telephone attendant, but with the telephone company as well. He distinctly dislikes any unfair criticism of such a vital entrance to his business. By working together, these three can develop a service that will be pleasing to those who may call the firm. Courtesy costs little, but it pays big dividends through customer appreciation. Courtesy and helpfulness over the telephone can do more to win customer favor and approbation than any medium of advertising.

The extent to which telephone service is benefited depends largely upon the service overtones and upon the temperament and personality of the attendant of the telephone system. If a telephone attendant's speech is expressive, pleasant and easy to understand that is good enough. Each person's voice is unique. This is why we can often recognize a person by his voice. Just because an office manager happens to like the voice of someone he has talked with over a telephone, he should not attempt to change his own attendant's voice to harmonize with the one that pleases him. However, it should

not be objectionable if he were to suggest certain courtesy changes he noticed in the other person's handling of his call.

Just Good Business

The telephone attendant's attitude towards a customer is of the utmost importance. The manner, tone of voice and phraseology used during a telephone conversation can give a personal approach to every question and show an honest endeavor to be of assistance in helping the caller with his problems. That is just good business.

It is not difficult to cultivate an easy, natural, personal manner toward a customer. It need not be a long drawn-out, fatiguing affair to develop a pleasing telephone voice. A few minutes each day devoted to conscientious attention to what one says and how it is said will suffice. Good enunciation and good diction will become a habit if consideration and attention is given to each call.

Phrases are the expression of one's thoughts in the interchange of ideas with the customer. By framing a suitable reply to each question or statement as it is met with, the recipient of the information can be made a friend and a booster for the company, providing, of course, the speaker has enough knowledge of the subject to convey the impression that the information given is dependable.

Proper Use of Telephone

A firm's reputation for good business methods often is affected by the way in which a telephone is used. It can be used carelessly and business will drop off. It can be used with such consideration and thought it can't help but kindle a business friendship that will add to the company's popularity and bring in additional revenue.

"If through training, a telephone company can lower the occupancy time of equipment and operators, seconds saved on each call can mean many dollars in the over-all . . ."

Send in Your Questions

Mr. Brackett is preparing a series of articles on the importance of PBX customers and how telephone company traffic personnel can help them get the most out of their service. This is a serious problem for many Independent companies, with the dispersal of industrial plants and other large businesses to their territories. Mr. Brackett invites questions from our readers on this important subject, which he will cover in his articles. Send them to TELEPHONY.

"Hello" for an answering phrase is ancient as the Ming dynasty and it should be as extinct as the Dodo bird. It is a time waster. If you said "hello" a hundred times you would still have to identify yourself in order to carry on an intelligent conversation. "Good morning" and "Good afternoon" may be a pleasant way to greet a person whom you meet face-to-face but a rather singular way to accost a person who meets you by telephone from a different time zone. Morning may be afternoon to the caller, or vice versa. Not only that, but adding words to an answering phrase ties up the telephone circuit for seconds and distracts from the most important words in the answering phrase . . . the name of your company. A good telephone attendant will put a friendly intonation into her voice when greeting a telephone caller which will say "Good morning" and still save the busy customer's time . . . and money should the call be from a distant city.

Visualize Other Party

The telephone transmitter is not a converter. It is tuned to a normal pitch and tone of voice. It cannot change mumbled, incoherent speech into intelligible words or phrases. It cannot soften a loud raucous voice, changing it to soothing, pleasing speech. The person who is using the telephone should never have his lips more than one-half inch from the mouthpiece. His lips must be open to let the words come out naturally and unimpeded and the voice modulated if the tone is not to be distorted. For the sake of good speech one should never turn his head from the telephone while talking.

To make each telephone conversation more interesting, one should try to visualize the party on the other end of the line. Many telephone attendants do this. They smile as they talk. Sometimes they gesticulate to put emphasis on a particular problem they are explaining. They devote their whole time to what they are saying and do not have the distracting habit of doodling while talking, nor do they attempt to look over their mail or become preoccupied with other work at their desk.

The conscientious telephone attendant will avoid personal calls while on duty because such practices use up valuable time which belongs to her employer, and it ties up equipment that is needed for transmitting company business.

Office boys, clerks, salesmen, receptionists and officials are all components that make up the company. They must be courteous to the hundreds of customers with whom they come in contact by telephone. Each one of them has a part in building up good-will for the company. Constant courtesy and understanding the other fellow's problem is a must if a business friendship is to be cemented into an everlasting reality.

Time Loss Great

Many executives ask their secretaries to get a customer on the line. If the young lady has been long on the job and has a retentive memory for numbers she puts the call through at once. But studies have shown that approximately 50 per cent of the time she has to look the number up in a directory and, to do this, she must put aside her work as secretary. Such a practice can, and often does, cause delay and confusion and could effect a loss of business.

Each directory call averages approx-

(Continued on page 46)

"In many business establishments, the most important person in the organization could be the telephone attendants . . ."

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

AN INTERESTING article on an experimental dial-in handset was recently carried in *The Bell Laboratories Record*. This article states that there are particular applications where the advantages and added conveniences of a telephone of this type are immediately apparent. For a bedside installation, such an instrument would permit easy dialing while lying down. Or, in drive-in coin stations where the handset is brought into the automobile, the necessity to reach out for dialing would be eliminated.

The article states further that there are several possible locations for mounting the dial in a handset. The standard lineman's test set has the dial located at the back of the instrument at the receiver end. Another possibility is to mount the dial fingerwheel concentrically around a small transmitter unit. This arrangement appeared attractive, but it would require both a new transmitter unit and a small dial designed to meet several system requirements for large-scale usage.

Still another dial-in handset, a European design, stands upright with the dial located in the handset base. All of these dial positions have one or more disadvantages, such as difficulty or awkwardness in dialing or in unbalanced distribution in weight.

The article goes on to explain that locating the dial between the transmitter and the receiver overcomes most of the difficulties. Since the dial can be recessed in a cavity, the needed mechanical protection is obtained automatically, and inadvertent rotation of the dial is minimized. In this arrangement, the handset shell is contoured to fit the hand, with the dial nesting snugly in the palm—a very convenient, stable position for holding and dialing.

With the basic form of the handset thus established, a compatible base was developed, resulting in a much smaller telephone with a distinctively different character. The new handset, including the dial, weighs 12.4 ounces, a little lighter than the standard black phenolic handset which weighs 12.5 ounces, but heavier than the color handset (10.1 ounces).

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A freak accident, down in Virginia, recently interrupted service on a 900-pair cable for the Chesapeake & Potomac Telephone Co. The bed of a dump truck travelling along the highway snapped up and snagged the cable.

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All-number calling (ANC) replaced a five-digit telephone system two years ago in Wichita Falls, Tex., a city of 120,000. Experience there, plus results of preliminary Bell System tests, indicates the following advantages of the new system:

(1) All Number Calling provides 640 immediately available prefix codes in each DDD area. Moreover, it is expected that this number will be increased to about 800 by allotting numbering plan area codes to serve also as prefix codes within each area.

(2) More accurate dialing. For example, ANC eliminates confusion between the letter "O" and "Zero," and between the letter "I" and the number "1." Dialing errors have been up as much as 216 per cent after six months in some exchanges when converting from five digits to 2L-5N numbers. Dialing errors were up only 53 per cent six months after the Wichita Falls change over.

(3) Faster dialing. Numbers are easier to locate on the dial than are letters. Thus, dialing seven digits is faster than locating and dialing two letters and five digits.

(4) ANC avoids several disadvantages connected with the use of exchange names. For instance, exchange names are likely to be misspelled or misunderstood. Some customers express dislike for certain exchange names, etc.

(5) Ultimately, if ANC is in use throughout the country, dial plates would be simplified by elimination of the letters.

(6) ANC will eliminate the need for translating letters to numbers, then back to letters again, for billing purposes. ANC also simplifies operator recording and reading of toll tickets.

•

The Bell System repaired over 9 million telephones in the Western Electric Shops during 1959.

•

We printed an item on this page in the Nov. 21, 1959 issue with reference to a mechanical "Wake Up" service.

We are now advised that on Aug. 25, 1959, Patent #2091542, relating to automatic "wake up" service, was assigned to the American Telephone & Telegraph Co. Messrs. Ivan R. Sheldon and Eugene W. Henches, of the Manhattan area engineering department of the New York Telephone Co., are the inventors.

This "wake up" system, which was designed for a large hotel, is arranged to serve 2,200 rooms and to automatically call 800 rooms either simultaneously or by assigned groups. A recorded announcement is provided. The circuitry of the device is connected, as required, to the room extension jacks at the hotel's manual PBX switchboard.

The equipment arrangement also provides for smaller installations, as needed.

•

We have been told that in the early days of the telephone business, substation installers worked various rackets in the larger city.

Immigrants were flocking to our shores at that time and many of them ordered telephone service. An installer would, for example, get an order to install a telephone in an Italian home. The installer would explain to the lady of the house that for $2.00 extra he would give her a telephone that would speak and understand Italian. The lady, having in mind her many Italian friends who had difficulty with the

English language, in most cases paid the $2.00 gladly. After the telephone was in service, the installer would ask the lady of the house to call one of her Italian friends for a test. Naturally, it worked fine and she was always pleased.

This worked very satisfactorily indeed for a time, but like all rackets, it was finally exposed and several installers lost their jobs.

•

Long-time friend of the writer, Dermot K. Foley, who lives out in California, has a sister residing in Ireland. She wrote recently as follows:

"I must tell you that last June I applied for telephone service to my new abode at the above address. After undue delay on their part, and on my writing several letters trying to prod the Department of Posts and Telegraphs to get a move on, I received the following letter dated Dec. 7th from the 'powers that be.' So now I am stymied and cut off from the outside world and our immediate family, this last being particularly hard to accept as we are a very telephone-minded family."

The letter received from Roinn Poist Agues Telegrafa (Department of Posts and Telegraphs) is quoted, as it indicates that the telephone business is booming in Ireland also:

"Please refer to your recent letter regarding your application for telephone service at 7 Duncairn Terrace, Bray. We regret that we are unable to hold forth any immediate prospects of providing you with a telephone due to a shortage of spare wires in the underground cables serving your area.

"The position is that we must wait until additional cables are laid before we can commence new installations and undertake a general clearance of applications in the locality. The recabling work will be carried out as quickly as possible, but we cannot say exactly when this work will be completed.

"The inconvenience occasioned to you through lack of telephone facilities is fully appreciated, and we are sorry we cannot let you have a more favourable reply. We wish to assure you, however, that no unnecessary delay will be allowed to arise in this case, and we will notify you immediately it becomes possible to provide you with telephone service."

•

We received our 1960 Bell System credit card the other day and it is provided with a place to carry a dime. This is considered an excellent idea as one will never be without a proper coin to make a call from any pay telephone. Now, if we can only find a dime!

•

It is said the man who falls down on the job usually starts from a sitting position.

Plant Man's QUIZ

By RAY BLAIN, Technical Editorial Director

Q. We are having trouble with the lead-boring beetle that attacks both lead and plastic-covered aerial cable. Can you please furnish us with any information concerning how this pest may be controlled?

A. We have had numerous reports from tropical and semi-tropical countries of telephone companies that have experienced considerable damage from these lead-boring insects. Various remedies have been tried, although it is doubtful if any of them are 100 per cent effective.

Perhaps the only positive remedy is to install tape-armored cable. It would appear that any of the PIC cables that have a metallic shield would provide adequate protection against the attack of these pests.

The protection of existing aerial cable, however, is another problem. One operating company has had some success by coating the cable with tallow. Another has coated the cable with a heavy grease. It is not believed that either of these remedies is overly effective. The tallow will quickly dry out and peel off and the grease, under high temperatures, melts and gradually disappears.

It is believed that the most effective method of treating existing cable is to paint it with Synthite Enamel KR-19 mixed with ½ pound of DDT (6%) per gallon. This treatment in one case proved effective over a two-year period. The next year, however, the cable suffered two cases of trouble as the result of the lead-boring insects.

•

Q. We would like to know what gain may be expected by installing load coils on telephone cable.

A. When load coils are installed on a telephone cable circuit, the unit loss (DB's) can usually be reduced to one-third or one-fourth of the non-loaded value.

From an economic point of view, the loading of 24-gauge cable will provide about the same grade of transmission as a non-loaded 19-gauge pair, having three times as much copper.

Other advantages claimed are that it is possible to avoid the use of repeaters in many cases by extending the transmission range, or to make use of fewer repeaters. As an example, a loaded 19-gauge cable pair will provide satisfactory transmission a distance three times greater than a non-loaded 19-gauge cable pair.

•

Q. We are debating the type of warning signal that should be used on our maintenance trucks when it is necessary for them to be parked along a highway at night. Can you give us any advice in this matter?

A. Some companies use, in addition to the tail lights, large reflecting type signals. Small battery-operated red flashing lights which appear to prove quite satisfactory, are also now available.

Some companies use large revolving flasher-type beacons on top of their truck cabs.

Before using this arrangement, however, it is suggested that you consult your local and state authorities to determine whether this type signal is legal in your locality.

•

Q. Will it prove desirable to provide a cable vault in a new 1000-line dial exchange?

A. In our opinion, a cable vault, with ample space provided for probable future growth, will prove to be a good investment.

It is true, however, that some savings can be realized by eliminating the cable vault and bringing the outside cables along the wall in the rear of the main frame. The tip cables are spliced at this point and brought up the wall and over a rack to the protectors. At best, though, this cannot be termed a neat installation.

•

Q. Will it be possible to make use of rural distribution cable for buried construction?

A. It would be possible although we have never heard of it being done. In our opinion, you could be well advised to use wire or cable especially designed for buried construction.

pr public relations in the Telephone Business

. . . GOOD CORPORATE CITIZENSHIP

BY R. L. POST*

Part 6

ONE OTHER aspect of public relations which must not be overlooked is corporate citizenship —how the telephone company, through policies and actions, conducts itself as a corporate citizen of the community. Without good corporate citizenship, no telephone company can obtain the respect and admiration of the public which is so necessary for good public relations.

Since this entire series has dealt primarily with ways the employe group can contribute to the PR welfare of the telephone company, let us look first at how the employes can help make a good corporate citizen of the telephone company.

As was stated in the second article, actions of the employes, both on and off the job, influence over-all public relations of the telephone company since people in a community judge a company by the words and deeds of its employes. This fact makes it imperative that the telephone company do anything and everything in its power to encourage and develop its employes to be good citizens of the community and to take part in community activities.

The telephone company should indoctrinate every employe on the importance of good citizenship and the desirability of contributing time and effort in worthwhile community activities. Every employe should be made to feel that civic work is a real obligation of the individual, as a community will be only as good as its citizens make it. It is both a personal responsibility and a company responsibility to take part in community activities.

In some instances, the telephone company will want to allow a reasonable amount of time off the job to take part in such activities. This, of course, must be handled with good management judgment as such a privilege could be abused.

When an employe is elected to an office in an organization which works for the betterment of the community, the telephone company should take steps to let the employe know that the company is proud of the employe for his achievements. Recognition of a job well done in participating in community activities is most important.

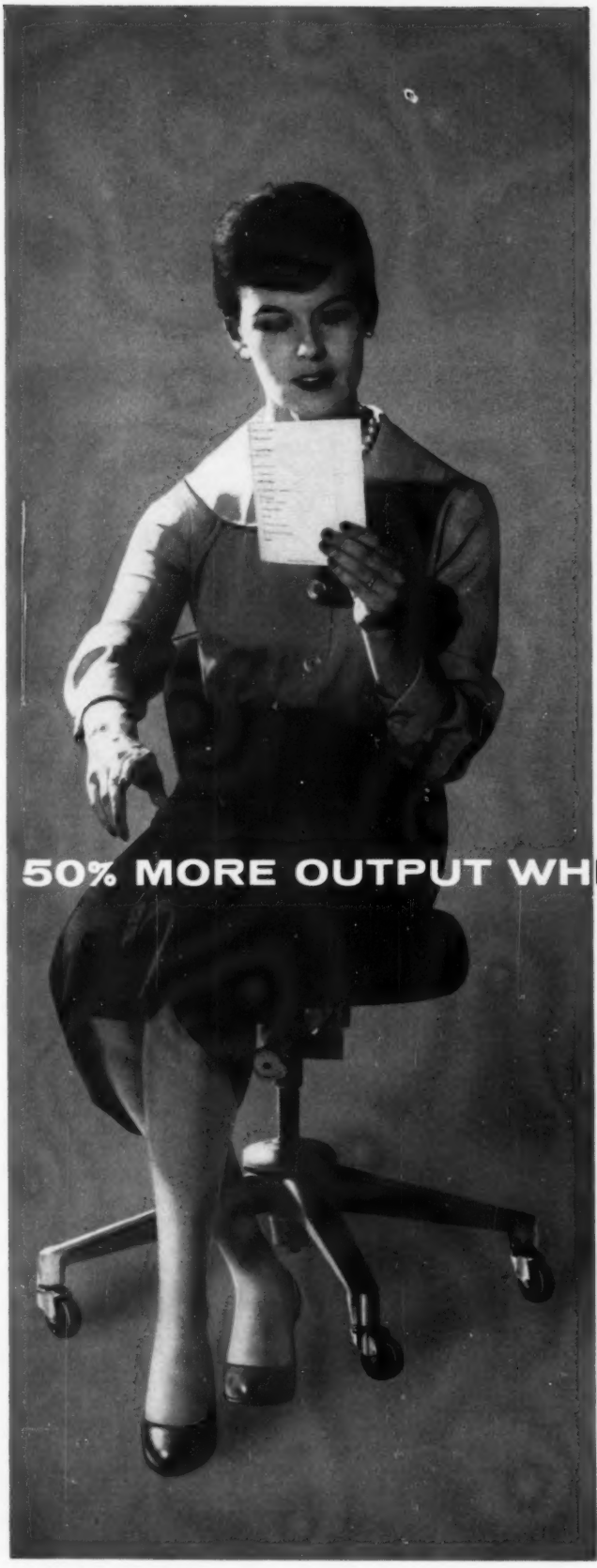
It must be pointed out that some people may become too involved in community activities—in fact, to the extent that their job performance suffers. Again, proper supervision and management is necessary to see that no employe gets engaged in so much civic work that he or she can not do any job well. Some telephone companies go so far as to require their employes to get company approval before accepting any real time consuming job, such as president of a civic or service club. The employe group should know the telephone company policy as it relates to participation in community activities and should realize that such participation is encouraged.

There is no question but what the telephone company should be represented in the major service clubs in town, if for no other reason but to feel out attitudes about the company and its local service. The telephone company will want to pay the membership fees for its authorized representatives.

The question often arises as to who will be the telephone company member in the club. In some companies, it is always the commercial representative. Other telephone companies disregard departments and try to get a person who will also contribute his personal time (while off the job) to the work and activity of the club. When the telephone representative shows he has not been active in attendance and in the activity of the club, the company removes him from the club and replaces him with someone who will take an active part in the work of the club. One telephone company is persistent in making certain that the representatives in the civic clubs relate official company policy and not union policy when attending civic club activities. All these merit consideration when deciding upon

(Continued on page 47)

*Mr. Post is Public Relations Director of Southwestern States Telephone Co., Brownwood, Tex. Parts 1, 2, 3, 4 and 5 appeared in Dec. 5, Dec. 19, Jan. 2, Jan. 16 and Jan. 30 issues.



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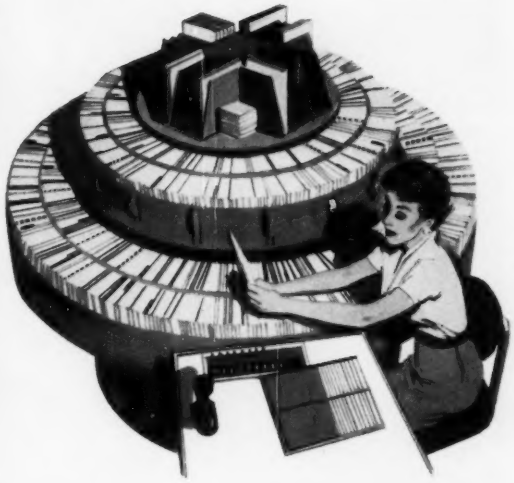

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WESTERN ELECTRIC AND

SKILLED EMPLOYEES, Tom McKennon (left) and Bob Townsend, perform final test of Centralized Automatic Message Accounting equipment. It will soon be installed in a Bell telephone company central office, helping bring its customers Direct Distance Dialing. Other major products manufactured by the Kearny Works include telephone cable, undersea cable amplifiers, switchboards and radio relay apparatus.

KEARNY, N. J.

Just across the Hudson River from New York City . . . in the heart of one of New Jersey's mighty industrial centers . . . Western Electric's Kearny Works plays an important role in the manufacture of telephone products for the Bell System.

The more than 17,000 employees of Western Electric's Kearny Works consist mostly of "commuters" who come by bus, train, tube and car . . . some arriving via the historic waterside approach known as The Old Plank Road.

Their main job at this major manufacturing plant is to help make telephone products like cable, switchboards and dial switching equipment. Their success is best measured by the years of trouble-free service these products have given to Bell telephone customers.

Sharing in this job—and in its success—are 2500 New Jersey companies which annually provide Western Electric with $83 million worth of supplies and materials.

But our employees and our suppliers share in more than our job for the Bell System. Their paychecks help support local merchants . . . they contribute substantially to state and local taxes . . . and they lend vital support to a myriad of community activities. In fact, they do all the things that come naturally to a good neighbor.

Besides Kearny, Western Electric has manufacturing plants in 24 other cities where we also make hundreds of different telephone products for the Bell System. In 1959 we bought over a billion dollars' worth of raw materials, products and services from our more than 35,000 suppliers in every state, 90% of them "small businesses." The things we make and buy are distributed to the Bell telephone companies through Western Electric distribution centers in 32 different cities.

Western Electric

MANUFACTURING AND SUPPLY UNIT OF THE BELL SYSTEM

EDITOR Eugene Farrell of *The Jersey Journal* in nearby Jersey City sums up Western Electric's contributions to the area: "The Kearny Works is the kind of solid, steady industrial neighbor we like. And its people are among our best citizens."

BLOOD BANK at Kearny Works is among the nation's largest. Every year thousands of Western Electric employees donate to local blood banks. Thousands more show their community spirit by enthusiastically supporting many civic activities.

BEAUTY QUEEN, Marilyn Eley, of the Kearny Works, met her State Senator, Donal C. Fox, in a visit to the New Jersey Capitol in Trenton. Later, Marilyn addressed both the Senate and the State Assembly, expressing the appreciation of her fellow employees for the state's enviable record of good government.

W. E. BUYER, Dirk Van Gelder (left), discusses design of a subcontracted part with Kearny supplier, Walter Pabst, President and Founder of the Pabst Engineering Equipment Co. Mr. Pabst has been doing business with the Kearny Works for 27 years.

USITA Offering 1960 Four-Week Management Development Course

THIS IS THE TIME of the year, the United States Independent Telephone Association points out, when telephone company managements will do well to seriously consider arranging for one or more of their key employes to submit applications for enrollment at the Management Development Program sponsored annually by the USITA.

This program is conducted at the University of Kansas, Lawrence, Kan. The 1960 Program is scheduled for the four-week period July 10 to Aug. 5. Enrollments are limited to a total of 48 and the 1960 enrollment closing date is Mar. 1, USITA states.

Brochures describing the 1960 Program were placed in the mails during December, 1959. Those interested who have not received a copy, complete with application forms, will, for a limited time, be able to obtain copies either through the offices of state telephone associations, or by writing directly to Dr. James R. Surface, Director, USITA Management Development Program, c/o University of Kansas, School of Business, Lawrence, Kansas.

Alert Independent telephone company managements are recognizing more and more the value of participation in this important program; that while it is difficult to be away or to have a key employe away for a full four-week training period, most of the progress we ever make is the result of doing the difficult; and that a very vital part of the work which management has the obligation for doing today involves preparation for the work and developments to be confronted tomorrow.

The USITA Management Development Program is the result of several years of study and development work by USITA's Personnel Committee and by the University of Kansas School of Business. During this study and development period, members of USITA's Personnel Committee visited many universities throughout the country and were aided materially by counseling with many of our country's best experts in the field of management development work.

The program is designed for executives who currently have important administrative responsibilities. Areas of development are grouped under three general headings—"The Functions of Administration," "The American Business Climate" and "Rate Regulation." The Functions of Administration portion is, in turn, subdivided to include: Control and Financial Administration; Human Relations in Business; Merchandising, and Administrative Policy and Planning. The case method of instruction is used throughout much of the program.

Important improvements being made in the 1960 program reflect the benefit of more successful methods used in previous years and other improvements suggested by faculty and participants in previous years' programs. The program reflects the experience gained from a variety of successful types of executive development programs conducted in the United States and in other countries. A mock rate case in which every participant takes an important part has proven to be a very popular feature and it will not only be repeated but expanded as a part of the 1960 program.

Faculty for the program is comprised of experts in the areas of their respective responsibilities—from the faculties of Harvard University, University of Virginia and the University of Kansas. Dr. James R. Surface, formerly of the Harvard Business School faculty, now Dean of Kansas University School of Business, is director of the program. He has had extensive experience in management development work for telephone companies and others, throughout the United States and in Canada.

Here are a few excerpts selected by representatives of USITA's Personnel Committee from questionnaires completed by participants in the 1958 and 1959 Programs.

". . . excellent. The fact that students were all from the telephone industry permits closer scrutiny of these studies in a way that was easily understood by all students."

•

"I recommend that this course be a must for telephone executives."

•

". . . general living conditions and treatment at the University of Kansas were the finest. The faculty members, the class, and all others whom I contacted were most friendly and helpful."

•

"Very beneficial training."

•

"Good instructors who were willing to give assistance and did after classes. I learned more than I realized at first and more improvements will be showing in the future."

•

"The overall program was excellent and curriculum and instruction far beyond my expectations."

•

"The USITA committee responsible for this program is to be highly congratulated. I was most fortunate in being afforded this opportunity to improve my ability in the field of management."

•

"I highly recommend the program. The benefits I received are continuing to grow."

•

"The overall program was extremely worthwhile and I was more than fortunate in being selected to participate."

THE OPERATOR'S NIGHTMARE

When the day is going smoothly, and you're feeling mighty good,
And everything is clicking like a normal workday should,
Oh, it's then you get a joker with a funny point of view
Who thinks he's Cassanova by the way he talks to you.

Just when you're feeling chipper over getting rid of him,
And chances for him coming back are looking pretty slim,
You'll get a call for "Joseph Smith"—you'll find there's forty-four,
And your customer has just the name—no address—nothing more.

Then the ever-present kiddies will persist in dialing "0"
While their Mamma's in the bathtub—and they want to talk to Joe,
Of course, a real fast talker will then place a lengthy call,
And wonder in amazement why you can't record it all.

Oh the life we lead is crazy, and they say you have to be
Just a little bit abnormal for the work of such as we.
But the rewards are never ending for the girl whose job's well done,
For long distance operating just goes on—and on—and on.

—Mrs. Laurel Jane Teach, operator, The Champaign Telephone Co., Urbana, Ohio.

THE Operator's Corner

By MAYME WORKMAN — TRAFFIC EDITOR

IN THIS WEEK'S series of questions, the writer has the query, "Do other companies rate the work of their employes the way telephone companies do?"

They certainly do since this procedure is helpful to the company, to the individual and to the service rendered.

Take insurance companies, for example. Many rate the work of their office personnel. Some of the items rated are:

(a) Quantity of work
(b) Quality of work
(c) Dependability
(d) Cooperation
(e) Office conduct
(f) Job attitude
(g) Knowledge of work
(h) Judgment
(i) Adaptability
(j) Initiative
(k) Business contacts
(l) Decisiveness
(m) Mental alertness
(n) Ability to communicate
(o) Emotional stability
(p) Resourcefulness

For those in supervisory positions, supervisory ability is needed.

After the rating, the employe has an interview with the department head and the rating is discussed, with opinions expressed by both the department head and the employe.

Such rating interviews, if properly conducted, can be very helpful in stimulating interest in the job; lending encouragement and help, when needed and giving the employe and the department head a clearer picture of the job performance of each employe in the department.

If ratings are not properly made—fairly and impartially with a desire to be helpful—they can readily defeat the purpose for which they are intended. Rating instructions should be carefully read and thoroughly understood before the supervisor attempts to make a rating.

An employes' performance and development guide may serve a definite purpose in any business where a large number of people are employed and work together.

A friend of mine, employed by an insurance company, called me one day to tell me she had gotten her rating, stating, "And what do you think? It was all good except for just one item. My attendance. You remember I had quite a few days this year when I had to miss work on account of illness. I hope to do better next year. It is helpful to know what kind of a job you are doing and whether or not they are satisfied with your work. I like my work and expect to be here for a long time."

She probably will, as she is a most conscientious worker.

If she is not busy with her own work, she asks if there is something she can do to help some one else in her department, or in some other department. There usually is, and the time passes much more quickly as it always does when you are busy.

Then too, there is the satisfaction of being able to help another employe who may be having a particularly heavy work load at that particular time. Also, the energetic person has an opportunity to learn some of the work performed in other departments and by other personnel—an interesting experience.

Storing up knowledge often proves to be an asset at some future time. If you will pardon my dealing in personalities for a moment, many years ago I was dependent upon the stenographer in the office to do my typing.

Often she was busy and my work was delayed. There was an extra typewriter in the office, and I decided to try to do my own typing. With a few helpful suggestions from the stenographer, I was soon doing my own typing and my reports were no longer delayed.

No doubt the stenographer was also glad to be relieved of doing my typing.

To follow through with this story, I could not hold the position I am holding today if I were unable to type, as about fifty per cent of my day is spent in this occupation.

Too often people hesitate to do something which is "not their job," as they say, and they often fail to obtain knowledge, which might be most helpful to them in the future.

There are, of course, instances when it is not possible to do some other person's work, due to job categories in the organization. The thoughts expressed do not apply to such conditions, but rather to office workers who do not have such categories.

There are some instances where people work so hard to keep *from* working, doing as little as possible, that they are exhausted at the end of the day, and what a boresome day it must have been! As an example take the stenographer who came strolling in at 10 a.m. Her boss said, "You should have been here at 9 o'clock this morning."

The girl replied, "Why? What happened?"

What happened indeed! Your guess is as good as mine.

What is work? It is, or it should be, doing what you enjoy doing. If you don't enjoy it, you are in the wrong job.

Traffic Questions

(1) If an outward operator is attempting to reach a called station and while waiting for the called telephone to answer, the calling party indicates that he believes the telephone will not answer, how should the operator proceed?

(2) Is there an abbreviation for the word "reorders?"

(3) When an outward operator receives a report that the called line is out-of-order, how should she proceed?

(4) Do other companies rate the work of their employes the way telephone companies do?

(5) How is an NC signal recognized?

Answers to questions are on page 48.

WHEN THIS HAPPENS GET SERVICE BACK FAST

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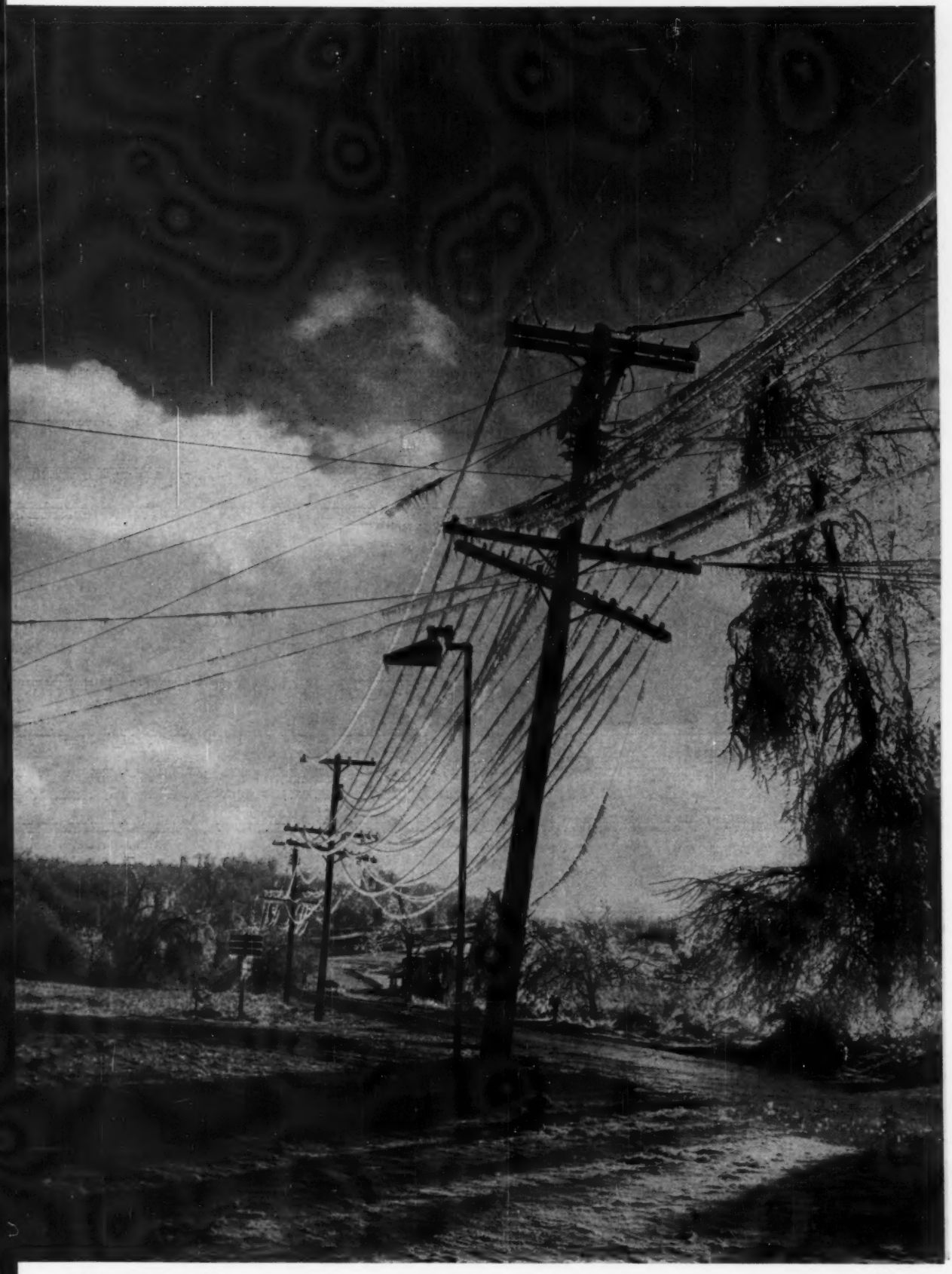

Check List Helps Determine Best Man for Job

By William J. Milford

ONE of the toughest assignments facing any executive is to decide which one of several employes is to be selected for a forthcoming promotion. Aside from the desire to be as fair as possible, he must also be certain that the best man for the position, from the standpoint of value to the organization, will be selected.

Here's a method being used by a number of executives, not only in the telephone field, but in others as well.

They employ a promotion check chart. The individual under consideration is rated as to positive possession of, uncertainty about and failure to possess the desired quality. Two points are scored for an affirmative opinion, one for a neutral evaluation and none for the negative checks.

The various totals, arrived at by the scorer for each of the employes being checked, serve to spotlight the individual possessing the best potential for the new position.

Points to be evaluated vary from one job to another. We have selected, herewith, 50 of those which appeared most often in a wide number of such lists checked. (The reader may use all of these points, or any number, since different factors will apply for different staff positions under consideration.)

(1) Keeps quality of present work exceptionally high day in and day out.

(2) Is continually improving his own knowledge of the industry.

(3) Knows what to do in average situations without being told.

(4) Has always been willing to share in unpleasant work or unpleasant aspects of the job with other employes.

(5) Is good at routine; has shown a knack for following established patterns.

(6) Is not fixed in his ways of doing things and has shown willingness to alter previously established methods.

(7) Has the ability to learn new methods and has shown positive interest in doing so whenever possible.

(8) Has demonstrated orderliness in his present work.

(9) Possesses adequate knowledge of the details of his present job.

(10) Has shown a definite interest in receiving a promotion and wanting to rise in the organization.

(11) Requires a minimum of instruction for any ordinary work assignment.

(12) Can think things out—does not need minute detailed explanation of what to do on every assignment.

(13) Has shown no inclination to "goof off" at the job now held.

(14) Has a good record of past work performance not only with the organization but on previous jobs.

(15) Takes good care of his personal health in private, as well as on the job.

(16) Has a record on his present job of a minimum of errors in judgment.

(17) Can do every regular assignment without needing close supervision.

(18) Does not give alibis or excuses for failure to do his work.

(19) Has a general attitude of cheerfulness at his present job and around others.

(20) Shows seriousness at his work; has demonstrated a minimum of "horse play."

(21) Can do his present job without physical or mental strain.

(22) Demonstrates patience with others in connection with his work; both those above him and at his own level in the organization.

(23) Is able to prorate his energies throughout the day and therefore keep at top efficiency all day long.

(24) Has demonstrated a positive interest in the field in the past.

(25) Has demonstrated loyalty to the company.

(26) Knows how to get along with supervisors in his present job.

(27) Possesses the ability to concentrate on a given problem and solve it effectively in a minimum of time.

(28) Seeks and does additional tasks connected with his job without their being assigned directly to him.

(29) Is respected by the men and women with whom he has worked.

(30) Can stand criticism from superiors as well as fellow employes without being hurt or showing resentment.

(31) Is usually pleasant and cheerful as a natural personality trait.

(32) Willingly conforms to the rules set for employe conduct.

(33) Does not become flustered or embarrassed easily.

(34) Has personal long-range plans for his career and has worked toward them in the past.

(35) Can take criticism given to him and show profit from following through in making improvements.

(36) Is willing to accept responsibility when things go wrong on the job.

(37) Has pleasant personal habits and traits.

(38) Is settled in his personal life away from the job, and in relationships with others.

(39) Is able to work with, and get along with, both sexes among employes and customers.

(40) Has few fixed prejudices in his personal thinking, and none which would make him unfit for the position.

(41) Has learned all of the basic fundamentals of his present job and shows possibility of doing so, easily, on the job under consideration.

(42) Has full appreciation of the principle that the company must make a profit and of how that is done.

(43) Lives within his means and successfully manages his money problems on his present income.

(44) Has the necessary background and education to handle the next step up the ladder.

(45) Has developed good outside interests to offset any job tensions which might develop in his work.

(46) Has demonstrated willingness to help others who lack his own capabilities.

(47) Has demonstrated self-confidence and assurance both on and off his present job.

(48) Has refrained from obvious apple polishing, a sign of personally admitted shortcomings.

(49) Has expressed confidence in the company.

(50) Has shown no signs of unstableness in political or economic thinking in the past.

The promotion check chart used should have four columns. In column one, the number of the point under consideration is listed. Column two is for a positive evaluation, column three for a neutral ranking and column four for a negative evaluation. Not all points may be applicable to every position. Column two and column three are totaled to arrive at the individual's score.

PLAN NOW FOR ECONOMICAL EXPANSIONS WITH COPPERPLY®...

When you use National-Standard **COPPERPLY** wire (copper-coated steel wire) for conductors, you are preparing with safety for your five-year plan because additional carrier systems can be added at any future time without additional wire or construction.

COPPERPLY's exclusive electroplating process produces *uniform* coatings of copper in a variety of mil thicknesses, means that you get just the amount of copper coating you need . . . you don't pay for excess copper. And you get improved performance, too, because **COPPERPLY's** precise concentricity—uniform through the entire length—gives you better balanced circuits and longer wire life. National-Standard Company, Niles, Mich.

Write for Bulletin 203 that lists full size data, specifications and application photographs.

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DIVISIONS: NATIONAL-STANDARD, Niles, Mich.; tire wire, stainless, music spring and plated wires • **WORCESTER WIRE WORKS** Worcester, Mass.; high and low carbon specialty wires • **WAGNER LITHO MACHINERY**, Secaucus, N. J.; metal decorating equipment • **ATHENIA STEEL**, Clifton, N. J.; flat, high-carbon spring steels • **REYNOLDS WIRE**, Dixon, Ill.; industrial wire cloth • **CROSS PERFORATED METALS**, Carbondale, Pa.; decorative, commercial, and industrial perforated metals.

Courts and Commissions

Approve Rates for Dial PABX, Electronic Sentry in Neb.

On Jan. 26 the Nebraska Railway Commission approved an application of the Lincoln Telephone & Telegraph Co. to offer a dial PABX system designed for small offices. The system has a capacity of three trunks and 12 stations and requires no operator or attendant's cabinet. The monthly rate for switching apparatus, including power and battery supply, is $25. Regular rates apply for trunks, stations and other related equipment.

Also approved was a rate of 25 cents for a night light telephone to provide an illuminated dial. This is in addition to the regular station charge.

The General Telephone Co. of Nebraska, Columbus, was given permission to provide an Electronic Sentry at a monthly rate of $8.00 and a non-recurring charge of $10. This is an automatic warning unit which rings a designated telephone to warn of hazardous conditions such as fire, loss of pressure, floods, temperature, burglary, malfunctioning of machinery or processes, and the like. In ringing the telephone, it has an overriding feature in case of a busy condition.

Halt Hearing on Bid for Multi-Listings in Illinois

The Illinois Commerce Commission on Feb. 2 halted the hearing of further testimony in the petition of Sigmund Schy to list his telephone answering service in the Chicago telephone directory in 10 different ways at the head of all alphabetical listings.

Mr. Schy, general manager of a telephone answering and radio paging service in Chicago, had asked the commission for these listings:

A, AA, AAA, AAAA, AAAAA, AAAAAA, AAAAAAA, AAAAAAAA, AAAAAAAAA and AAAAAAAAAA, all with the number DE 2-7900.

These listings, which would lead all others in the alphabetical telephone book, also would enable Mr. Schy's service to dominate the telephone-answering service section of the Yellow Pages. If granted permission for the listings, he intended to buy a 2-inch ad under each classified listing, totaling one-half page in the classified directory.

The Illinois Bell Telephone Co. resisted Mr. Schy's requests on the ground that its tariff filed with the commission forbids any special arrangement of names not necessary for identification.

William E. Helander, commission examiner, who presided at the hearings, refused Mr. Schy a change of venue, and closed the hearing.

Mr. Schy said he would appeal to court if the commission denied his application.

Nevada Company Asks Court To Review Rate Increase

The Southern Nevada Telephone Co., Las Vegas, on Jan. 25 filed suit in district court in Las Vegas for a judicial review on its request for rate increases granted recently by the Nevada Public Service Commission (TELEPHONY, Feb. 6).

Named as defendants were the commission and the community of Boulder City, which appeared as an intervener.

The Southern Nevada company contended there were errors in computing its net worth when the commission granted lower rate increases than were asked. It also said that the commission did not take into consideration the increased costs of operation and of providing better service.

The company's request on one-party residence rates was for an increase of from $6.00 to $8.00; the commission authorized a rate of $6.40. On one-party business service, the company asked for an increase from $11.25 to $18.50, and received $13.75.

The hearing was to have been held before District Judge David Zenoff on Feb. 1, the date on which the commission-approved rates were to go into effect.

Missouri Exchange Sold

The Golden City (Mo.) Telephone Co. has sold its property to the Southwest Dial, Inc., Gardner, Kan., it was reported on Jan. 9 (TELEPHONY, Dec. 12). Bob Wolf is operating the exchange for the new owner.

Authorize Rate Increase For Wisconsin Company

The Wisconsin Public Service Commission on Jan. 19 granted a rate increase to the North-West Telephone Co., Tomah, affecting 16 of its exchanges (TELEPHONY, Aug. 15).

The company asked the increase to compensate for salary increases granted employes.

The North-West company serves subscribers through its exchanges at Boyd, Cadott, Chetek, De Forest, Delafield, Dousman, Eagle, East Troy, Genesee Depot, La Grange, Mukwonago, North Prairie, Palmyra, Poynette, Ripon, Spooner, Wild Rose, and Wonewoc.

La. PSC Asks High Court to Rehear SBT&T Rate Decision

The Louisiana Public Service Commission on Jan. 25 filed a plea with the state supreme court asking for a rehearing of the court's recent decision ordering the commission to grant rate increases to Southern Bell Telephone & Telegraph Co. (TELEPHONY, Jan. 23).

Although the company had asked for increases amounting to 14 million dollars, the commission had allowed approximately 2 million dollars and had denied SBT&T's main application.

A lower court affirmed the commission action.

The Louisiana Supreme Court did not state the specific amount of raise the company should receive, but did reverse the lower court. The high court also said present rates of the company were not just and reasonable.

The commission said its application for a rehearing should be granted for the following reasons:

"(1) The (supreme) court correctly finds that the Public Service Commission is free to adopt any method of rate regulation which produces reasonable and just rates.

"(2) The court correctly approves the method adopted by the commission as calculated to produce such reasonable rates.

"(3) Specifically, the court correctly approves the commission's cost-of-capital approach to rate regulation.

"(4) Specifically, the court correctly approves the commission's adoption of

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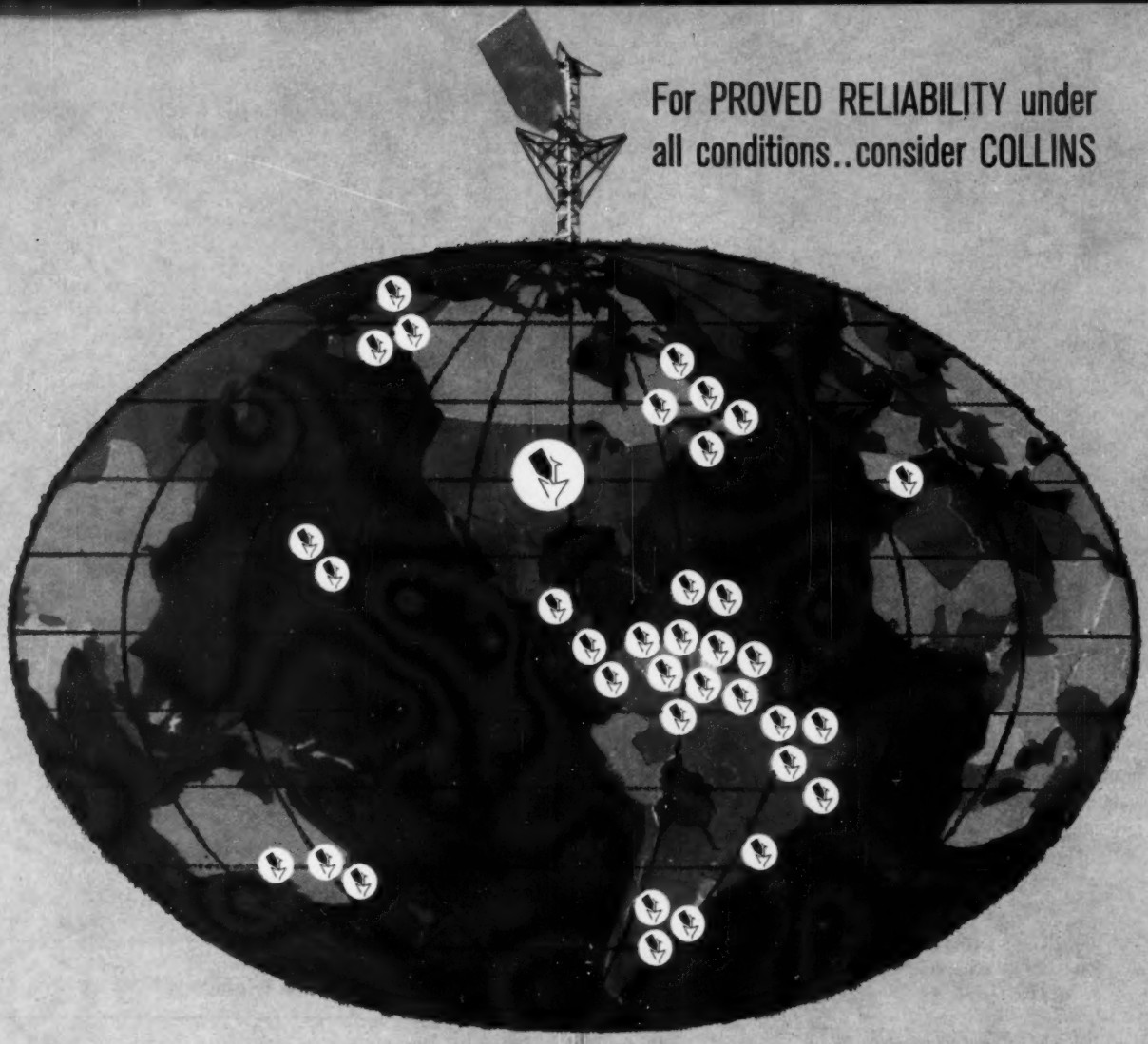

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the debt rate (sic) corollary in rate regulation.

(5) Specifically, the court correctly approves the disallowance of earnings on surplus for the purpose of computing necessary income.

"(6) Specifically, the court correctly approves the disallowance as expenses of taxes paid . . . only because of an imprudent and extravagant capital structure.

"(7) Nevertheless, that court erroneously establishes 'for the present time' a floor of 6 per cent on net plant, as adjusted by its opinion, as the minimum allowable return, in direct contradiction of its other findings, all the more fully set forth in appellee's original and supplemental briefs herein.

"(8) Accordingly, the judgment of the court is contrary to law and the evidence."

Western Union Asks FCC OK Of International Facilities Sale

The Western Union Telegraph Co. on Jan. 28 filed with the Federal Communications Commission a proposal to sell its international telegraph operations to Barnes Investing Corp. of Chicago, for 13½ million dollars.

The commission has ordered Western Union to dispose of its international telegraph operations, in compliance with requirements of the communications act.

Barnes Investing was described by a company spokesman as a finding corporation. He said Barnes intends to set up a new corporation which will raise the necessary funds for the purchase of the cable system and then operate it. Barnes is not an operating company, he said.

One condition of the sale, Western Union told the commission, is acquisition by Barnes Investing of the stock of Anglo American Telegraph Co., Ltd., and the release of Western Union from all obligations under a long-term lease to Western Union of Anglo's five transatlantic cables.

Authorize Oregon Loan

Oregon's Public Utility Commissioner, Jonel C. Hill, on Feb. 3 authorized the Haines Telephone Co. to borrow a sum not to exceed $52,000 from Stromberg-Carlson to finance construction, completion, extension and improvement of the company's facilities at its Medical Springs exchange. The Haines company's borrowing will be evidenced by interim notes. Then, no later than June 30, 1962, the company must execute a final note for unpaid balance, payable in 240 consecutive monthly installments.

To Hear Rate Bid in Cal.

The California Public Utilities Commission on Feb. 10 was to have heard the application of the Tuolumne Telephone Exchange for a rate increase.

Roundup of Telephone Excise Tax Developments

Following is a summary of recent telephone excise tax developments:

Seeking outright repeal of the excise tax on telephone service is a bill introduced recently in the House by Rep. Arch A. Moore (R., W. Va.). It was reported to be the first bill of this type introduced in the second session of the 86th Congress.

In the first session, there were 91 bills introduced dealing with repeal or setting a termination date for telephone excises, in whole or in part.

•

Representative Goodell (R., N. Y.) on Feb. 3 was reported to have introduced a bill that would extend the 10 per cent excise tax on local service another year except in states which adopt the levy themselves. This would carry out a recommendation of New York Governor Rockefeller. (As it now stands, the excise tax on local service is scheduled to die on June 30 unless extended by Congress.)

•

In a recent letter to Governor Rockefeller, Joseph A. Beirne, president of the Communications Workers of America, expressed the union's disapproval of the New York governor's proposal to levy the 10 per cent excise at the state level.

Mr. Beirne declared that the telephone excise tax does not meet the standards by which a tax should be judged. He added that such a tax should not be levied by any legislative body "merely for the convenience of securing additional revenues, regardless of the need for such monies."

Mr. Beirne said the telephone excise is nothing more than a sales tax and a very unfair one. He continued:

"No other utility service is so taxed. It is freely admitted today that the telephone is a necessity and should not be subject to the same kinds of excise taxes as are luxury items. It was on the premise that telephone calls were a form of luxury that initiated this tax in the first instance. We categorically reject this line of reasoning."

HOOVER IS A SYMBOL OF INTEGRITY

"Herbert Hoover is a working man. He worked his way through college. He worked his way to success as a mining engineer, and he worked his way to the top in public life.

"As a worker who knew the value of a dollar, and the penalty for waste, he sought to instill business principles of efficiency and economy in government when he was President of the U. S.

"Such a policy at that time was not popular with politicians . . . and the idea of a fair return for value received, went down the river. The idea of spending our way to prosperity with easy government money was launched.

"Mr. Hoover who abhorred waste and inefficiency in business as well as in government, returned to private life, but not to retire. He continued to work for the national welfare in countless ways. At the risk of being unpopular, he has sought to safeguard his country from a spend-thrift's fate.

"As he passes his 85th birthday, Mr. Hoover stands revered by a nation as a symbol of integrity, and an inspiration for a generation whose job it will be to save this heritage from the ravages of debt and inflation and destruction from within." — *Industrial News Review.*

SW Bell Asks FCC OK On Texas Purchase

Southwestern Bell Telephone Co. on Jan. 25 filed a petition with the Federal Communications Commission asking for authority to purchase the Seagoville, Tex. exchange of the Gulf States Telephone Co., Tyler, Tex.

The Seagoville exchange serves 618 stations.

Ask Sale Approval in Wyo.

The Eden Valley Telephone Association, Farson, Wyo., it was reported on Jan. 30, plans to sell its telephone plant facilities to E. F. Sullivan of Rock Springs. The Eden Valley company, which serves about 45 families in Eden-Farson, asked the Wyoming Public Service Commission for approval of the sale.

Seek to Sell Ark. Exchange

Robert McConnell Jr. and Ella Mae McConnell have applied to the Arkansas Public Service Commission for permission to sell the Green Forest Telephone Exchange, effective Mar. 1. The McConnells seek to sell to Vernon F. New of Russell, Kan. and Erwin D. Raus of Tulsa, Okla.

Grant Purchase OK in Ill.

The Western Illinois Telephone Co., Aledo, on Jan. 22 was granted permission by the Illinois Commerce Com-

(Continued on page 45)

it tilts

it swings

it rotates

new Space-Maker phone fits anywhere in the home

helps you sell more extensions

NEW TYPE 183 SPACE-MAKER

gives your subscribers more convenience.

Housewives will like the convenience of Type 183 in the kitchen. It mounts on a wall, cabinet or column.

Type 183 is a perfect bedside phone, mounts next to bed. You place or answer calls while lying down.

Dad has a Type 183 mounted right on his workbench. He never has to run upstairs to place or answer a call.

saves space!

Type 183 mounts on any vertical surface—wall, column, side of workbench, etc. This saves valuable work space on desk and table tops. It also keeps the phone out of the way when not in use.

flexible design!

Type 183 is the most flexible phone ever made. The dial actually tilts and rotates. The hookswitch actually swings. Result: your installer sets both dial and handset in the positions most convenient for the user. And you increase extension sales by offering a modern, compact phone that fits anywhere in the home.

modern styling!

Type 183 is original in design—presents a striking appearance wherever it's located. Subscribers can choose from 10 decorator colors.

standard components!

Type 183 uses the same components as our Type 80 and 90 phones, but without ringer. As an extension, Type 183 needs only two wires to its associated mainline instrument. It can also be used with a ringer box.

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Subsidiary of

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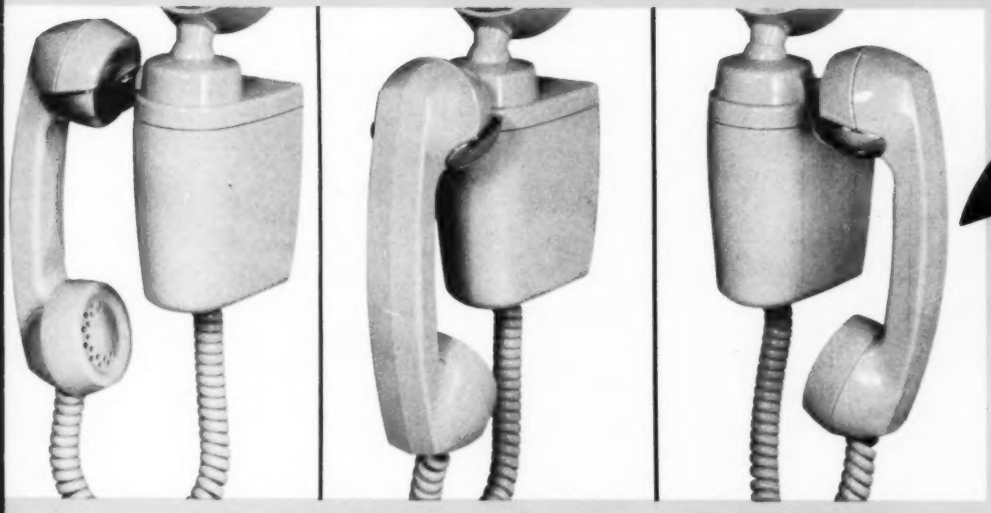
PHONE

.boosts your extension sales!

it tilts

You tilt the dial backwards up to 45°. At any point the dial locks in place.



it swings

You swing the hookswitch from side to side—a 180° arc. Within this arc, the hookswitch locks in seven positions.

it rotates

You rotate the dial 360°. At any point, the dial locks in place.

free promotion kit!

helps you promote new type 183 phone

This big Kit is packed with promotional material. It provides the tools that tell folks about the convenience of Type 183. Here's what the Kit contains: three posters, newspaper ad mat, press release, envelope stuffer (which can be ordered in quantity), radio commercials, and several display ideas. All this material is yours—free of charge. To order your Kit, just fill in the coupon below and mail.

USE THIS COUPON TO ORDER YOUR KIT!

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Northlake, Illinois
Attn: J. M. Zidlicky, Director of Sales Promotion

Please send me a free copy of your new Type 183 Promotion Kit.

name_____
(please print clearly)

company_____

street_____

city_____ zone_____ state_____

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mission to acquire the property of the Mississippi Valley Telephone Co., Carthage (TELEPHONY, Dec. 19).

Obituaries

FREDERICK GRAHAM MCLANE, 68, retired commercial manager of the Western Arkansas Telephone Co., Russellville, died on Jan. 3.

Mr. McLane retired from the company on Nov. 30, 1959, after some 50 years in the Independent telephone business. He had suffered a heart attack in August 1959.

A native of Ozark, Mr. McLane had gone to Russellville in 1935. He was a member of the Independent Telephone Pioneer Association.

Survivors include his wife, Mrs. Bertie Walker McLane; sister, Mrs. Taylor Hill of Russellville; and brother, C. L. McLane of Denver, Colo.

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DR. JAMES W. MCRAE, 49, vice president of the American Telephone & Telegraph Co., collapsed and died on Feb. 2 on a New York City sidewalk.

The Canadian-born microwave scientist, was on his way to a scientific conference when he was stricken.

He was in charge of defense projects for the Bell System.

Survivors include his wife and four children.

•

HOWARD A. ROE, 70, president of Telkor, Inc., Elyria, O., died on Jan. 24 of a heart attack while he slept.

For many years Mr. Roe had been associated in the telephone industry with both Independent and Bell companies. Telkor, Inc., manufactures telephone ringing equipment and central office power equipment.

Survivors include his son, Howard R. Roe, vice president and general manager of Telkor, Inc.

Complete Iowa Sale

Sale of the Kent (Ia.) Mutual Telephone Co. to the Creston Mutual Telephone Co. is to be effective Mar. 1. Conversion to dial service is expected to be completed by Mar. 1, 1961. Kent serves 125 stations.

Oregon Increase Sought

It was reported on Jan. 22 that the Mt. Angel Telephone Co. has asked the Oregon Public Utility Commissioner Jonel C. Hill for a rate increase.

Order Ark. Rate Reduction

The Walnut Hill Telephone Co., Lewisville, was ordered by the Arkansas Public Service Commission on Jan. 28 to reduce its rates by $10,000 to $11,000 (TELEPHONY, Jan. 16). The company serves subscribers at Lewisville, Bradley, and Mineral Springs.

Plant Department Changes Announced by SW Bell

Budd Reinhold has been named assistant vice president-operations for Southwestern Bell Telephone Co. He succeeds Fred B. Hunt, who becomes vice president and general manager for the company's Missouri-Illinois area.

Replacing Mr. Reinhold as general plant manager, North Texas area, is W. E. Fisher, division plant superintendent, Kansas City.

Other plant department changes: William F. Thompson Jr. was named division plant superintendent, Kansas City; D. G. Davenport is division plant superintendent, Wichita; and R. E. Furman took over as plant supervisor in the Kansas area headquarters at Topeka.

IN THE NATION'S CAPITAL

Concluded from page 21

lawful eavesdropping via a microphone. The spike is really part of a microphone and it can be driven into a party wall in such a way that it touches (but does not penetrate) the opposite wall. When this happens, conversations within the room can be heard and recorded. The Washington police used it on a party wall between two rowhouses, where they were able to get lawful access to one of the houses. The bugged spike picked up sound waves on the other side of the wall and they were made audible by amplification.

As a result, evidence was obtained of a gambling operation doing some $40,000 worth of business a day, mostly on horse races and baseball games. Three men were arrested and received jail terms up to five years, plus heavy fines.

One of the leading criminal lawyers in the nation, Edward Bennett Williams, defended the accused. When in the trial court, Federal District Judge Holtzoff refused to suppress the evidence obtained via the bugged spike; an appeal was taken. Williams admitted the implication of the Olmsted precedent, but he argued that the Supreme Court "as now constituted" (meaning with Black, Douglas, Chief Justice Warren, etc., on board) would surely overturn the precedents of previous planted microphone cases, and free his client. But Judge John A. Danaher, writing the majority opinion, said: "It is not our duty to speculate on what the Supreme Court will say in the future."

The government argued that there was no physical invasion of the house of the defendants. The majority of the court agreed. But Judge George T. Washington dissented on the ground that eavesdropping violates "our fundamental concept of ordered liberty."

Probably a further appeal of this case will be taken, and it will be interesting to follow, especially in view of Lawyer Williams' indirect appeal to Justices Warren, Black, Douglas, etc., over the heads of the Circuit Court before which he was pleading. But whatever way the case of the bugged spike turns out, it goes to show that people who sit up nights worrying about whether their telephone lines are tapped, are way behind the times—something like worrying about termites in the basement while the house next door is on fire.

Harvey Aluminum Installs Direct Voice Lines

A new transcontinental direct voice communication system has been put into operation by Harvey Aluminum. This special service was engineered by the Bell System for the exclusive use of the company.

Developed to expedite the handling of orders and technical data, the new high-speed service permits direct voice communications between the general offices of the company and its regional factory branches.

"Direct lines are a time-saving improvement enabling Harvey Aluminum to accelerate its program of better, faster service to customers," said a Bell System official. "The service will simplify company communications, making it possible for sales and engineering forces to call in their order immediately to the home office for processing."

Through this communication link, Harvey employes can dial a local number in the closest exchange city and be connected directly to the general offices in Torrance, Cal. "It's as simple as calling across the street," the official noted.

Harvey Aluminum is an integrated producer of aluminum, titanium, and zirconium, from primary metal through mill products.

Worry Not

"It is not work that kills men; it is worry. Work is healthy: you can hardly put more upon a man than he can bear. Worry is rust upon the blade."—HENRY WARD BEECHER.

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Maximum stretch and positive retractability mean carefree installations over the years when you select COMCO Spiraflex Cords for your handsets. Quality-built inside and tough-jacketed with rugged P.V.C. in your choice of ten decorator colors or black, they are perfect for any type service, any surroundings! Available in standard or extra lengths (10, 15 and 25 feet). But, see for yourself by putting a sample cord on your own phone. Prompt delivery assured!

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Popular Spiraflex is only one of the complete quality cord line COMCO is ready to supply. In addition, there are Nylon Jacketed Switchboard cords in four colors and operator cords in black or brown, plus black or colored P.V.C. jacketed receiver and deskstand cords, patch cords, transmitter cords, test cords, extra length cords and cords for inter-communication systems . . . all can be yours from COMCO.

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WE HAVE A GOOD REPUTATION—LET'S KEEP IT

Concluded from page 25

imately two minutes. If a company had a thousand calls a day and wasted two minutes on half of them, it would be costing that company over 16 hours of secretaries' time, equivalent to a day's work for two people. And that isn't all. There is a risk of losing customers who might call while the girl is hunting up the number.

High pressure and competitive business today calls for split-second decisions, instant calculations and above all, smooth operation. Therefore, an executive must be a shrewd judge of men and women and direct his organization with knowledge, diplomacy and dispatch. More than this, public relations is becoming more and more one of the executive's most important challenges.

Today, most executives of larger corporations are sent to seminars for schooling in the arts of their jobs. These seminars last from a week or two to six months. In class they are bombarded day after day with proven facts that public opinions can spell the success or failure of their company.

Salesmen in the organization are called into weekly meetings where they discuss the problems of salesmanship and again the customer is the foremost topic. Secretaries, department heads, supervisors and often craftsmen meet in conference for discussions of customer relations.

Telephone Training Neglected

But, if I am to believe the word of the many people to whom I have talked, the most important entrance to many companies has been shamefully neglected — the telephone. In many cases, it is secondary in the thoughts of management. We as telephone people must take partial blame for this neglect.

While much attention has been devoted to the education of executives, supervisors and craftsmen, apparently little thought has generated in the minds of management toward the importance of their telephone attendants in the scheme for the company's success in public relations.

In many respects, we telephone people have been remiss in our attitude toward the field of telephone attendant's training. We have been dilatory, even though we are thoroughly aware of the importance the telephone plays in the public approval of a business firm.

No doubt costs have entered into our thinking in some cases. Training of any kind does call for an outlay of expenses, in multi-office cities perhaps a really large financial output. If we have let costs fog our thinking, we are not visionary because every second saved through the proper handling of a call by our customers is money in the bank for us.

Seconds Saved Mean Dollars

We are aware that far more than half of the telephone calls in any city either originate or terminate at a business telephone. Therefore, if through training and other assistance we can lower the occupancy time for our equipment and operators by only a few seconds on each business call, the total saved time, company wide, would be tremendous and, as we know in our business, seconds saved can mean many dollars in the over-all.

I once supervised an office that was chosen to try out the new practice of saying "Thank You" to the calling party instead of repeating the number. It was met with such success it was given city-wide trial. Although only three or four seconds were saved on each call the total operator-hours saved in the city came to 136, or the equivalent of 17 operators' work loads.

So it is easy to see that the saving of only a few seconds by our business customers could call for needing less central office equipment, less toll circuits, less supervisory time and less repair service, because of less equipment use. But, perhaps, best of all, there could be less customer criticism.

DDD Brings Problem

As Direct Distance Dialing (DDD) expands, and more and more large business firms convert to dialing in to their telephone systems, there will be fewer opportunities for us, as telephone people, to come into contact with the users of our service.

Usually, the telephone company is held responsible for all telephone service whether that service is given by our people or by our customers' personnel. The telephone user cannot distinguish between the two. Our responsibility to our customers grows in importance. We cannot sit idly by and let our reputation for good service become tarnished because we have lost interest in our customer's communication problems.

We have a good reputation to uphold. We cannot neglect any facet of our contacts with the customer, if we are to continue to be worthy of the trust and respect we now enjoy . . . we dare not procrastinate.

PUBLIC RELATIONS

Continued from page 28

company sponsorship of an individual in a service or civic organization.

Other considerations in choosing who is to be sponsored in a club or organization would include whether or not the employe has the type of job duties that would permit reasonable participation in the club. The employe's personality traits might also be considered as only employes who like being around people, and who feel a responsibility in serving their fellow-men would make good representatives in service clubs.

Since the telephone company must maintain a non-sectarian and non-political position, it should not sponsor and pay for memberships of its employes in church, fraternal, or political groups. It might pay for membership in certain professional clubs.

In addition to contributing time and service of its employes and a certain amount of their expenses in clubs and activities which work to benefit the entire community, most telephone companies will want to make corporate contributions to worthwhile organizations.

Every American business—large or small—benefits both directly and indirectly from the increase of human knowledge, the elimination of ignorance and disease, the improvement of the living standards, and the relief of poverty and personal distress. A dollar wisely and soundly invested in worthwhile charitable, educational, and scientific activities comes back manyfold over the long term. Such expenditure which contributes to these ends should be neither an unnecessary burden nor a tiresome obligation. It must be remembered that if voluntary support should ever prove inadequate, soliciting agencies will be forced to turn to the government for support which can result in bureaucratic controls and higher taxes for support.

The following is a checklist to appraise the fund-raising organization and the extent of the telephone company's contribution:

(1) Is the soliciting organization a good one and does the organization have widespread acceptance and support?

(2) Does it tend to duplicate, overlap, or neutralize the efforts of other organizations to which the company has already contributed?

(3) Will the appeal solve the problem, or at least have a strong influence toward the solution?

(4) Is the organization best served

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ALPHADUCT
ALPHA "C"
(1 Pair Parallel Distribution Wire 12 & 14 AWG Copper Covered Steel, 12 Gage Galvanized Steel)
■ Alphaduct is as close as your telephone
■ Shipments from stock
■ Alpha "C" Goes up fast
■ You get Alphaduct quality
■ You get Alphaduct service
ALPHADUCT
National Distributors: Automatic Electric Sales Corp. Northlake, Ill. Leich Sales Corp. 427 W. Randolph St. Chicago, Ill. Regional Distributors: Buckeye Telephone & Supply Co. Columbus, Ohio / The Lindsay Telephone Supply Co. Cleveland, Ohio Pankey Supply Co. Charlottesville, Va.

Telephone and Power Companies

by private giving, or should it be financed by public funds?

(5) Should support stem from individuals rather than from a company?

(6) Is the soliciting organization efficiently and honestly managed by responsible citizens?

(7) Does it have an unpaid administrative board?

(8) Does it cooperate with local social agencies?

(9) Does it avoid commissions for fund raising, general telephone solicitations, and the sale of tickets or merchandise by the "remit or return" method?

(10) Does the agency prepare a financial statement?

(11) Is the organization attempting to influence legislation by propaganda or other means?

(12) Will the contribution benefit the telephone company directly or indirectly?

(13) What is the best measurable extent of the company's benefit—is it large or small?

(14) Will the contribution advance the public relations of the company?

(15) What will be the reaction of the community if the company does not give?

(16) Is the request consistent with the company's place in the community?

(17) Considering the total amount being asked for in the campaign, what seems to be a reasonable share for the company to assume?

(18) What amounts are other businesses in the community giving? What are other public utilities giving?

(19) What is the attitude of other companies, especially other utility companies, toward this activity?

(20) What is the relative importance of this appeal contrasted with other soliciting organizations?

(21) Have contributions been declared exempt for income tax purposes?

While policy on donations probably differs greatly from company to company, nevertheless, it is probably agreed that no telephone company could maintain very good public relations if it never made a financial contribution to any cause. By the same token, it is impossible to contribute to every organization that requests financial assistance. Setting a policy on which organizations merit donations and the amount to give is no easy task, but is one which should be done by any telephone company.

When it is agreed how much to contribute to the selected organizations, the company then should make its contributions as soon as possible. A contribution on opening day of a fund drive is best. Under no circumstances should the telephone company be among the last to make its contributions.

Each telephone company will also want to participate in its chamber of commerce organization as it is one group from which a telephone company can get a direct return on its dollar, provided the chamber is active in its work. A chamber of commerce donation is actually an investment of a sort in the community.

Again, good management decisions must be made as to the amount to give to the chamber of commerce, taking into consideration the actual value of the local chamber.

With a good, fair and workable policy on donations, contributions and memberships, as well as employe participation in community activities, the telephone company will maintain good corporate citizenship so necessary to the fostering of good public relations in the community.

(The End)

Conquest and Challenge

"Little minds are tamed and subdued by misfortunes, but great minds rise above them."—WASHINGTON IRVING.

ENGINEERS

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A Division of Cook Electric

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Answers To Questions On Page 33

(1) The operator will say, "All right, sir. Will you place your call again, please?" and proceed as directed. The operator will clear the circuit and release the calling line.

(2) Yes. It may be abbreviated as "reo."

(3) The operator will say "Right" and clear the circuit. She will give the report, saying, "The line is out-of-order. Will you place your call again please?" and will otherwise proceed in general as when a report of DA is received.

(4) Yes, some companies do. More information on this topic is contained in the preface to these questions.

(5) An NC signal is an audible, flashing, or audible and flashing signal at the rate of 30 evenly spaced impulses per minute to indicate that all trunks or circuits in a desired group are busy.

Telephone and Power Companies
CUT BRUSH DISPOSAL COSTS 25 TO 50%
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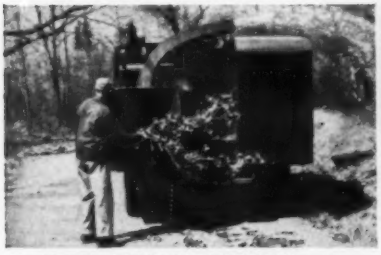
Crewmen from Rockland Light and Power Company, now Orange & Rockland Utilities, Nyack, N. Y. use special aerial ladders for pruning topmost branches.



BRUSH DISPOSAL METHOD No. 1
Rockland Light and Power Company crewman blows chips from FITCHBURG CHIPPER along roadway.

BRUSH DISPOSAL METHOD No. 2
Rockland Light and Power Company crewman blows chips from FITCHBURG CHIPPER into truck bin.

Some of the many Telephone and Power Companies using Fitchburg Chippers

Arizona Public Service
Phoenix, Arizona
Atlantic City Electric Company
Atlantic City, New Jersey
Central Hudson Gas and Electric Co.
Newburgh, New York
Consumers Power Co.
Jackson, Michigan
McDaniel Telephone Company
Salkum, Washington
Millington Telephone Co.
Millington, Tennessee
Mt. Vernon Telephone Corp.
Mt. Vernon, Ohio
Missouri Power & Light Co.
Hermann, Missouri
New Jersey Bell Telephone Co.
Vineland, New Jersey
Ohio Central Telephone Corp.
Patuskala, Ohio
Pacific Telephone and Telegraph
Northwest Area
Portland General Electric
Portland, Oregon
Public Service Co. of Oklahoma
Lawton, Oklahoma
Shawnigan Water and Power Co.
Quebec, Canada
Somerset Telephone Co.
North Anson, Maine
Southern California Edison Co.
Los Angeles, California
Valley Telephone Company
Silverton, Oregon
West Jersey Telephone Co.
Belvidere, New Jersey

A FITCHBURG CHIPPER will help get your brush disposal job done with *fewer men at less cost*—in any weather, wet or dry. No more loading, hauling, dumping, burning. Chips may be automatically loaded on truck or blown along right-of-way to keep down weeds.

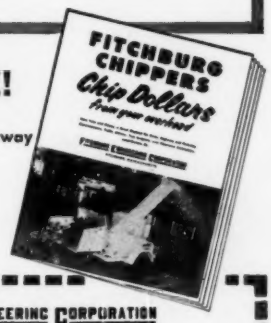
SAFETY IN OPERATION: Exclusive Fitchburg spring-activated feed plate automatically adjusts as wood of different sizes is fed into the machine. This feature allows you to chip larger size wood without extra power. It reduces shock action, protects the operator in case foreign materials are accidentally fed during operation.

MINIMUM MAINTENANCE: No heavy fly wheel to cause clutch strain or bearing failure. Easily maintained by your own field personnel.

ONE YEAR GUARANTEE: Only Fitchburg Chippers give you *all* these features, backed by the experience and engineering skill of the world's pioneer manufacturer of wood chipping equipment. For a facsimile of the exclusive Fitchburg guarantee and color brochure described at right, mail the coupon today.

NEW! FREE!

Mail Coupon for Brochure. Shows cut-away drawings of Fitchburg Chippers in action, specifications, photographs.



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Colored paystations are popular with merchants. They help dress up store surroundings. And there are 10 rich colors to blend or contrast with any background: Jade Green, Forget-me-not Blue, Camellia Pink, Gardenia White, Garnet Red, Turquoise, Sunlight Yellow, Dawn Gray, Classic Ivory and Sand Beige.

Automatic "80" Series paystations offer many other features, including:

Reinforced, burglar-resistant housing
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Magnetic slug ejector for 25¢ coin channel

For complete information about AE paystations, ask for our Paystation Catalog. Write: Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111. In Canada: Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16, Ontario.

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Columbia to Hold Ninth Utility Management Workshop

Columbia University has announced that its Ninth Annual Utility Management Workshop will be held at Arden House, Harriman Campus, Harriman, N. Y. from July 24 to Aug. 5, 1960.

Robert Teviot Livingston, workshop director, states:

"The objectives of the Utility Management Workshop are to enable a group of utility executives to study the job of top management in the utility industry and to develop out of their own experience and the experience of other industries workable solutions to the executive training problems in their own companies."

Mr. Livingston also says the flexibility and informality of the workshop approach to practical problems of management in the utility industry enables participants to focus directly on matters of most concern to them, and to apply the latest techniques of problem-solving to the best advantage in offering possible solutions.

As for participation, Mr. Livingston says, "Members are encouraged to contribute their own experiences in small group sessions where team study is thus well founded on industrial realities.

"The Workshop changes men by making them more conscious of the value of team work, strengthening their individual initiative and by freeing thought from conventional channels."

The course covers the following areas: The job of the manager — stereotype of the job; variations of the job; the man in the job, and the manager's human relations. Also, what the manager must get done—goal formation, forecasting, organization planning and policy expansion; communication, information and decision; administration and control; and corporate persistence: selection, training and development.

Further information may be secured from: Columbia University, Utility Management Workshop, 409 Engineering Building, New York 27, N. Y.

Briggs Retires from GT&E; Succeeded by Howlett

Robert F. Briggs, secretary of the General Telephone & Electronics Corp., has retired from the company after more than 31 years of service with the telephone industry, it was announced on Feb. 1 by Donald C. Power, chairman and chief executive officer.

Mr. Briggs is succeeded as secretary by Harold H. Howlett, formerly assistant secretary of the corporation.

A resident of Mt. Vernon, N. Y., Mr. Briggs was born in Charleston, Ill., in 1895, and later attended Eastern Illinois State Teachers College.

He served in the United States Army during World War I, and later gained extensive experience in the gas and electric public utility fields.

He started his career with General Telephone in 1929, when he was employed by Associated Telephone Utilities Co., predecessor company of General T&E. He has been secretary of the corporation since its organization in 1935.

Mr. Howlett joined General Telephone & Electronics Corp. through the merger with Theodore Gary & Co. in 1955. He was elected assistant secretary of the corporation in 1956.

Born in Merrill, Wis. in 1914, Mr. Howlett attended Northwestern University and University of Delaware.

He holds a number of other positions within the telephone industry, serving as secretary of both the Associated Telephone & Telegraph Co., and General Telephone & Electronics Laboratories, Inc.; as secretary and director of Compania Dominicana de Telefonos, C. por A., and of the West Indies Telephone Co.; as assistant secretary of the General Telephone Service Corp., the Anglo-Canadian Telephone Co., and of the Philippine Long Distance Telephone Co. He is also assistant secretary and assistant treasurer of the Alaska Telephone Corp.

IEI Technical Writing Seminars Set For 3 Cities

A one-day seminar on clear technical writing, is being offered by the Industrial Education Institute, in the following three cities:

Cleveland, Mar. 8, Pick-Carter Hotel
Chicago, Mar. 9, Sheraton-Blackstone Hotel
Cincinnati, Mar. 10, Sheraton-Gibson Hotel

These seminars, slanted towards engineers, scientists, industrial writers, editors, and others whose jobs include writing on technical subjects, are designed to help the writer prepare better reports, manuals, letters and presentations.

The IEI, in announcing the seminars says, "Communicating technical information in writing, is one of industry's biggest problems. Many good ideas never get off the ground because they are not understood by those who must evaluate them.

"Good technical writing goes beyond merely recording data. It must attract

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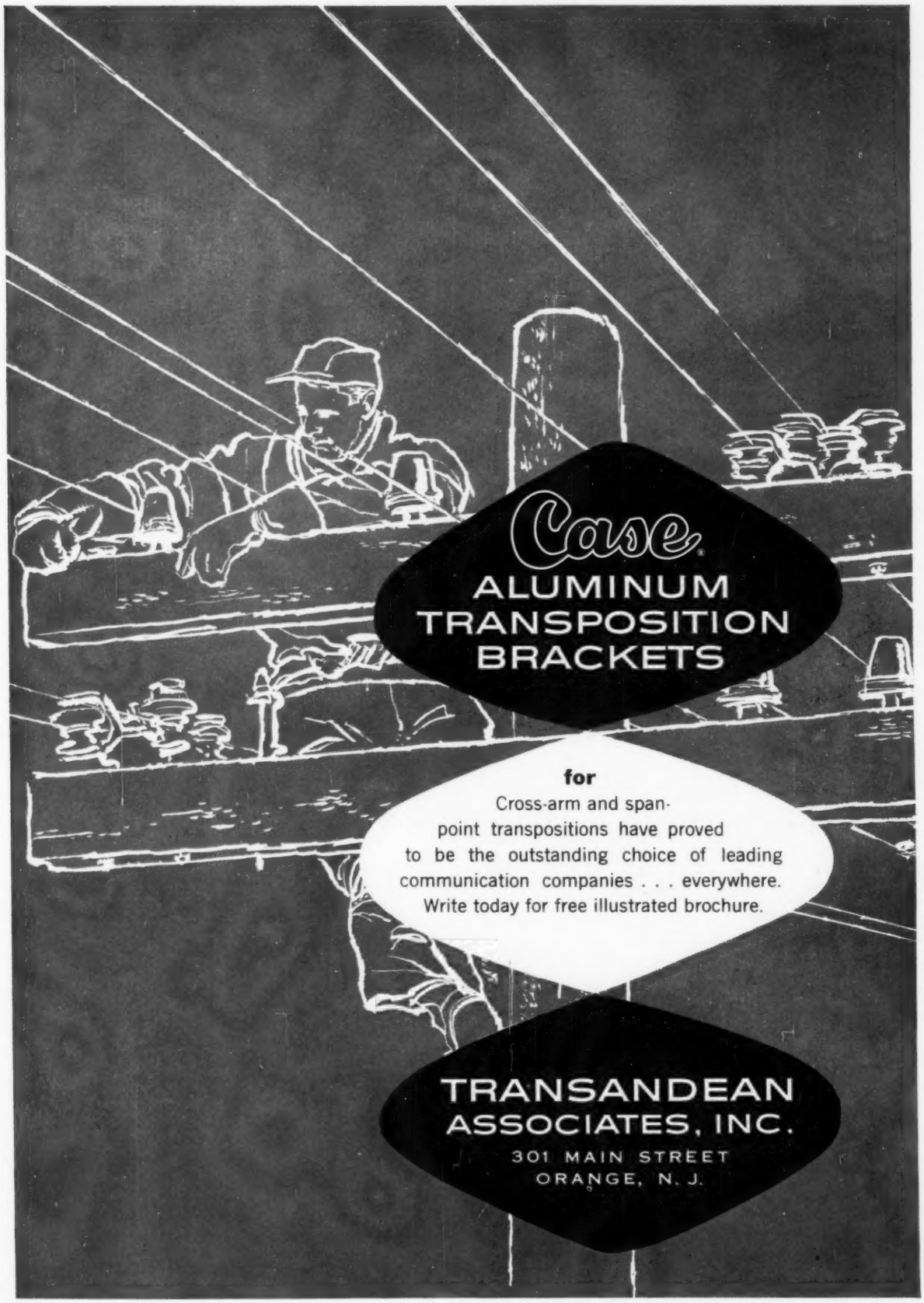
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the reader's attention, and get the information across to him quickly and accurately. The ability to organize thoughts on technical subjects, then put them on paper—clearly and concisely, multiplies output."

The objective of the seminars, according to IEI, is to give participants a usable formula that will improve what they write, a technique that they can apply to every job that involves writing on a technical subject.

The seminars cover the following topics:

(1) The science of clear writing.
  (a) Eliminating bad habits in technical writing.
  (b) Removing unnecessary complexity in writing.
  (c) How to write for varied audiences.

(2) How to measure reading difficulty.
  (a) Applying the "Fog Index" to technical writing.
  (b) Factors that cause reading difficulty.
  (c) Comparison of good and poor technical writing.

(3) Ten ways to improve individual writing style.
  (a) Principles of clear statements.
  (b) When to use the first person.
  (c) Hedging as opposed to necessary qualifications.
  (d) How to keep technical writing impersonal, without being inhuman.

(4) How to organize informational material.
  (a) How to sell an idea.
  (b) Making letters and memos shorter.
  (c) "Coming to the point."
  (d) Technical writing that convinces and gets action.

(5) How to improve dictation.
  (a) Learning to dictate skillfully.
  (b) Saving time and money through dictation.
  (c) How to keep from rambling.
  (d) The art of making an outline.

(6) Building a fog-free vocabulary.
  (a) Words to think with.
  (b) Improving reading and writing ability.
  (c) Putting thoughts into words that get action.
  (d) How to increase your writing vocabulary.

Conducting these seminars, is Robert Gunning, who has held writing clinics for the engineering staffs of major industrial organizations.

He is the inventor of the "Fog Index" and has been engaged by more than 70 publications to teach editors how to write more effectively for mass reader audiences.

Mr. Gunning is the author of "The Technique of Clear Writing," "How to Take the Fog Out of Writing," "Principles of Clear Writing," and "Clear News Writing."

Registration fee is $50 per person (or $45 each for three or more people from the same company). It includes both morning and afternoon sessions, lunch, coffee breaks, necessary supplies, a set of seminar notes, and a copy of Mr. Gunning's booklet, "How to Take the Fog Out of Writing."

Seminars start at 9:30 a.m. and end at 4:30 p.m.

Those interested should contact Industrial Education Institute, 25 Huntington Ave., Boston 16, Mass.

Ohio Company Plans Toll Handling Improvement

William C. McClusky, president of the Rock Creek (O.) Citizens' Telephone Co., has announced extensive expansion and improvements in the Rock Creek office, to go into service this fall.

Financing arrangements were completed through the manufacturer for a new 240-line NX-2 modular crossbar switchboard and direct distance dialing equipment, with a new building to house the equipment. The cost of the building, along with substantial additions to the cable plant, is included in the financing.

Mr. McClusky stated that the Rock Creek company was one of the pioneers of unattended dial operation in Ohio. He said with the cut-over of his new AuTollizer toll ticketing equipment, the company is reversing a trend by the resumption of its own toll handling. For the past 20 years, Rock Creek's toll has been handled by a connecting company.

48th Safety Congress Scheduled for Oct. 17-21

The National Safety Council has announced the dates of its 48th annual National Safety Congress. The meetings will be held in Chicago Oct. 17-21.

Locations for the meetings will be as follows:

For industrial safety: Conrad Hilton, Pick-Congress, Sheraton Towers, Morrison, and La Salle hotels.

For traffic safety: the Pick-Congress.

For commercial vehicle and transit safety: La Salle Hotel.

For farm safety: the Palmer House.

For school and college safety: Hamilton Hotel.

For home safety: Conrad Hilton.

For further information, contact R. L. Forney, secretary, National Safety Council, 425 N. Michigan Ave., Chicago 11, Ill.

See Beyond Today

"Oft the cloud that wraps the present hour serves but to brighten all our future days."—WM. BROWNE.

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CHET: "That's what I'm here for, Harry. How can we be of service?"

HARRY: "I need a tri-directional sign . . . a couple of hundred splicing sleeves . . . and two beige wall telephones."

CHET: "No problem at all, Harry. I'll take care of it."

HARRY: "But Chet—I need this stuff 'yesterday.' I know it's not much of an order, but can you rush it?"

CHET: "I'll get it out this afternoon, special delivery."

HARRY: "Thanks a million, Chet. Sure appreciate it."

CHET: "Well, we appreciate getting your order. Every single one is important to us, regardless of size."

HARRY: "How about that!"

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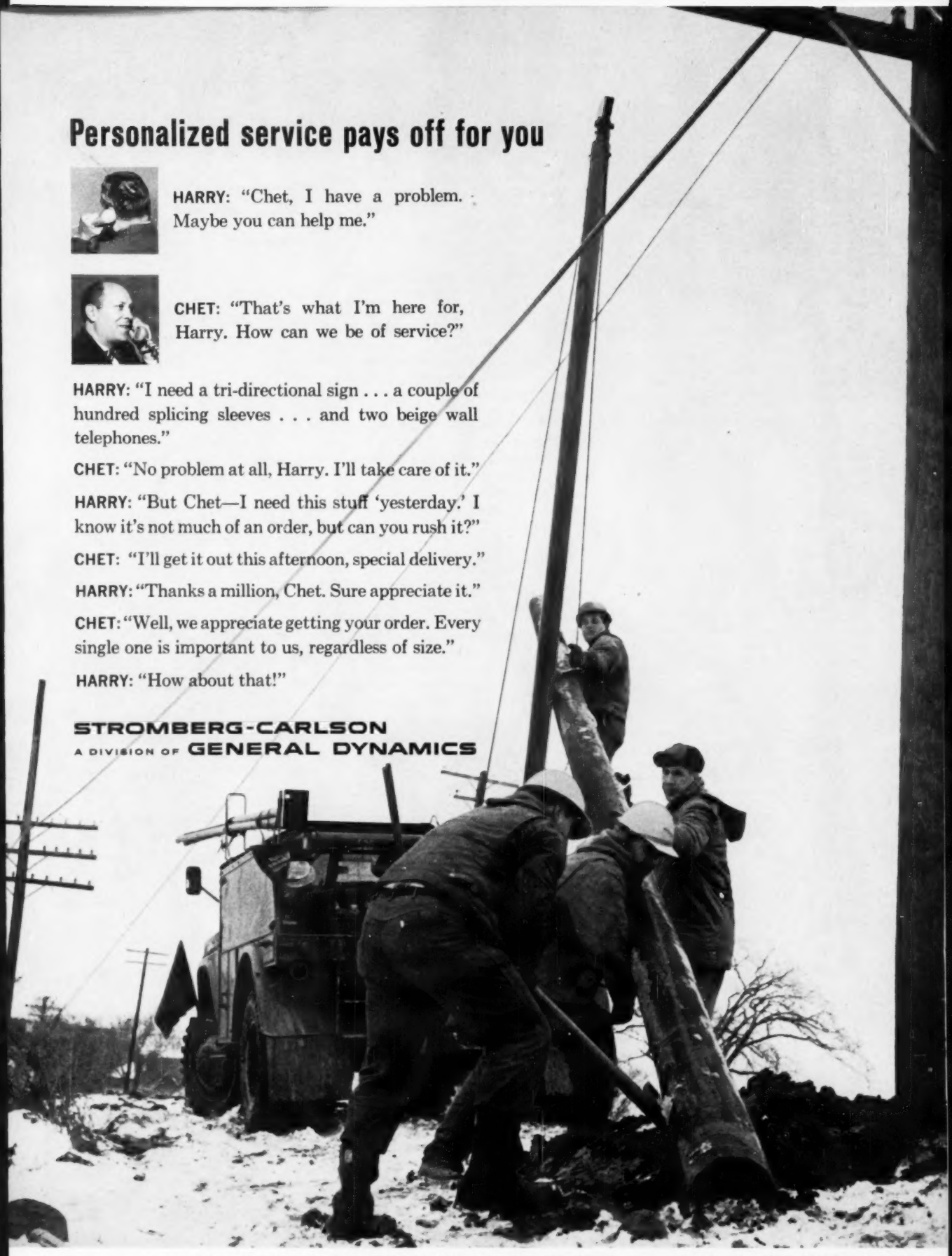

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News on New Products

FLASHING LAMP CIRCUIT—A circuit designed to provide flashing line lamps at intercom stations for indicating the station dialed has been incorporated into the K1A1 key telephone system by Kellogg Switchboard & Supply Co., communications division of International Telephone & Telegraph Corp.

Each K208A K.T.U., the company reports, is a single panel unit on which the apparatus for three lamp flash starting circuits is mounted and wired to an associated panel.

The apparatus is protected by a metal dust cover.

The approximate panel size is 6-15/16 inches by 3-15/32 inches. Approximate weight is 4 pounds 8 ounces. Request NP1265.

•

DIAL LIGHT — NIGHT LIGHT — Kellogg also announces that a dial light—night light feature is now available on the K-500 series telephones.

A turn switch on the lower left side of the instrument controls the lamp, which provides only enough light to locate the telephone in darkness. When the handset is raised, the glow brightens to illuminate the dial.

A small (2 inch x 1-5/8 inch x 1-3/8 inch) plug-in transformer supplies 6 volts used by the lamp. Request NP1266.

AIR FLOW INDICATOR—The S & G Mfg. Corp. announces that they now have, as part of their accessory line for telephone maintenance, an Air Flow Indicator (identified as Part No. 8177) for use in locating leaks.

S & G says this air flow indicator accurately determines the direction of air flow in leak locating work on cables maintained under pressure. It can be used in the field or in the vault to determine in which direction the air is flowing.

When the direction of air is indicated by the plastic ball in the indicator, the operator will then know which side of the cable the leak is on by the action of either the right or left hand side of the air flow indicator. In some cases, the company states, when the flow is small, it may be necessary to lay the test meter

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Please have the manufacturer send me without obligation the literature indicated by the following numbers:

NP1265_____; NP1266_____; NP1267_____; NP1268_____;
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NP1281_____; NP1282_____.

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2/13/60

for use with

overall RF bandwidth is approximately 1.0 Mc measured at the 6 db points.

down flat on the ground to get a reading.

For example, when the ball on the left side is up, and the right one is down, the air is flowing from left to right. When the right ball is up, and the left down, the air is flowing from right to left. The operator then knows that the leak is in between this test section.

The air flow indicator comes in a plastic carrying case with gripper fastening—is small, light, easy to carry, S & G says. Request NP1267.

•

INDEXING KIT — Convenient reference to microfilmed records usually depends on proper indexing, Recordak Corp. points out. To provide an easy step-by-step method for finger-tip accessibility of records on microfilm, Recordak, a subsidiary of Eastman Kodak Co., announces a new indexing kit and instruction booklet.

The new indexing kit is based on more than 30 years of experience in the microfilming field. It provides for easy organization of the files to be filmed, together with the reference targets to properly organize the material on film. The kit can be used with nearly any type of microfilmer, Recordak states.

Included in the kit are flash cards, targets, camera operator's certificates, and many other forms for locating microfilmed items. Request NP1268.

•

VHF PULSE TRANSMITTER — A 1-kilowatt VHF pulse transmitter which operates over a frequency range of 152 Mc to 174 Mc has been developed by Sierra Electronic Corp., a division of Philco Corp.

The new transmitter, Model 200A, delivers a peak pulse power of 1000 watts at a maximum duty cycle of 50 per cent into a nominal load impedance of 50 ohms. The unit's input modulation requirement is 1 to 4 volts peak into a 100-ohm termination. RF output pulses are constant throughout the range of input voltage, and the

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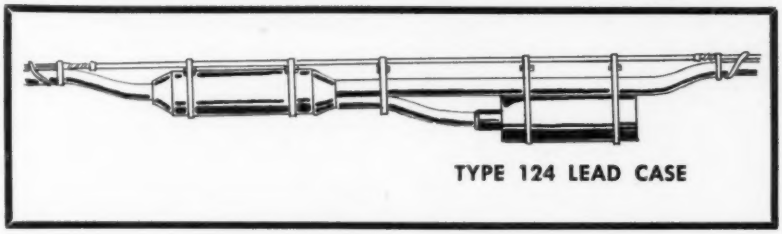
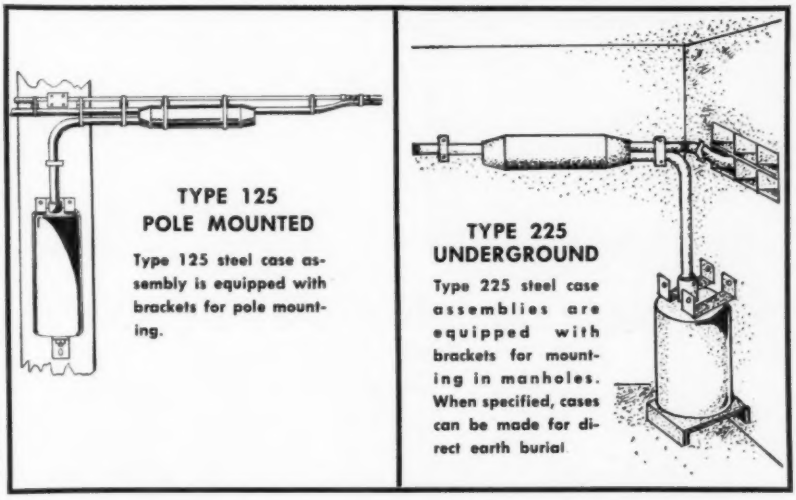


TYPE 124 LEAD CASE

STEEL CASE ASSEMBLIES

- ALL LEAD STUB ASSEMBLIES ARE PRESSURIZED
- ALL PLASTIC STUB ASSEMBLIES ARE HERMETICALLY SEALED



TYPE 125
POLE MOUNTED

Type 125 steel case assembly is equipped with brackets for pole mounting.

TYPE 225
UNDERGROUND

Type 225 steel case assemblies are equipped with brackets for mounting in manholes. When specified, cases can be made for direct earth burial

Voice frequency coils, type 632(88MH) and 638(44MH) are primarily designed for use on two wire telephone cables. Types MF10, MF11, 641 and 642 coils are furnished for quadded interoffice and toll cables. Special coils can be made to meet other requirements.

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The S. E. 20B 3, a Western Electric equivalent unit, consists of two pieces:

new!

TERMINAL FITTING —HOUSING FOR FIVE CONNECTORS

Used with the Bell System Call Director Telephone, Wiremold's 2857T Terminal Fitting effectively provides an ideal housing for cable connectors. Of rugged diecast aluminum, it can be mounted on floors, walls, desks (side or kneehole).

For away-from-wall locations, Pancake 2800 Overfloor Duct is the neat way to house and protect the cable. Fitting and duct both hold 100- or 75-pair cable.

Get the full story from Wiremold or your electrical distributor.

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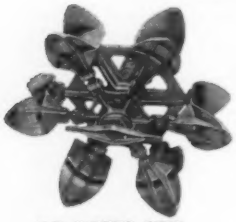
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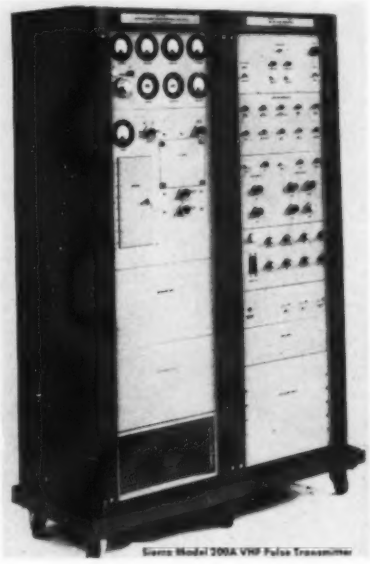
overall RF bandwidth is approximately 1.0 Mc measured at the 6 db points.

A typical application for the Model 200A is in PCM data transmission systems operating in the 200A's frequency. Sierra states the unit is capable of continuous, unattended service for long periods of time and has an operating ambient temperature range of 10° to 55° C.


Sierra Model 200A VHF Pulse Transmitter

The transmitter's RF output signal between modulation pulses is 60 db or more below the 1-kilowatt output signal. The unit operates from a 208-volt, 60 cycle, three-phase, 4-wire input.

Model 200A includes a primary/standby configuration with provisions for automatic switchover between the primary and standby units. The entire transmitter stands 73 inches high and is mounted on a roller truck for easy portability. Request NP1269.

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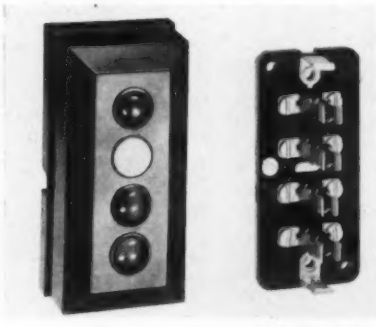
INDICATOR LIGHT—Announced recently by Suttle Equipment Corp. is the S. E. 20B 3 four-lens indicator light for use at subscriber stations and in central offices as a visual signal.

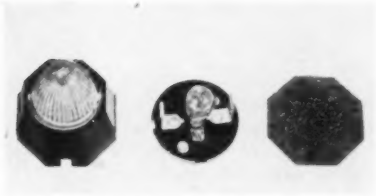


The S. E. 20B 3, a Western Electric equivalent unit, consists of two pieces; the four lens plastic housing including white, green, red and amber glass lamp caps, and a plastic base with four lamp jacks which are described as taking any standard switchboard lamp in 6, 12, 24 or 48 volts.

The black plastic S. E. 20B 3 presents a pleasing appearance in offices and is said to serve as an excellent visual signal where four signals in one compact unit are required. Request NP1270.

•

NEON FLASHER SIGNAL — Also from Suttle is a neon flasher visual signal which operates on incoming ringing voltage without requiring relays for operation.



The SE-21B3 incorporates a tall clear lens, ridged vertically for light transmission, with full 180-degree visibility on all sides.

The neon lamp included provides an alternately flashing amber glow which is quickly recognizable by users to denote an incoming telephone call. Request NP1271.

•

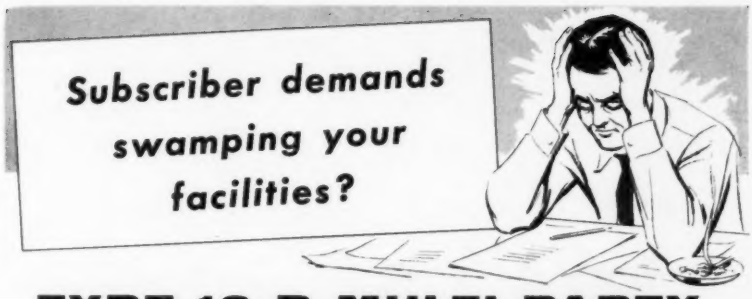
TRANSITE TELEPHONE DUCT FILM —A new motion picture film, available to telephone company engineers and to contractor-installers, illustrates the many advantages of using asbestos-cement telephone duct, Johns-Manville states.

The film was produced by J-M to show how Transite telephone duct with its plastic couplings means greater overall economy in duct work for a telephone company.

Entitled "Guardians of Communications," the 20-minute full-color and sound picture shows the installation economies possible with Transite ducts and the quick, easy methods of trenching, laying, and joining through the use of the flexible J-M Coupling, the company states. The film contains laboratory and field sequences showing Transite's resistance to corrosion . . . to the infiltration of water and silt, and how in combination with a tight joint, its smooth interior surfaces add up to savings in pneumatic rodding. Request NP1272.

•

COMPACT IN-LINE VALVE—A compact ½ inch In-Line Valve has been



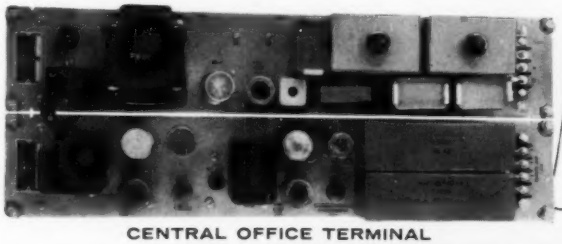
TYPE 16-B MULTI-PARTY 7-CHANNEL CARRIER is your low-cost answer!

Budelman Type 16-B Carrier will:

- Provide additional circuits on existing party lines.
- Provide more-party service on new party lines.
- Better the service on existing party lines.
- Provide new circuits to new areas or subscribers beyond the 1200 ohm loop range.
- Free party line circuits for private line or pay station service.
- Provide additional trunks to remote PBX, PABX, or key telephone systems.

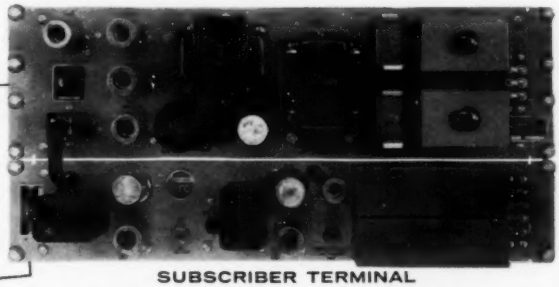
FULLY SELECTIVE 10-PARTY DIVIDED RINGING
SEMI-SELECTIVE 10-PARTY BRIDGED RINGING
SINGLE FREQUENCY CODED RINGING

All this without adding to your outside plant or disturbing existing services.



Fewer Vacuum Tubes, Simpler Circuitry than any other carrier system on the market

CENTRAL OFFICE TERMINAL



Crystal-Controlled Oscillators, Automatic Regulation — found only in systems costing much more.

SUBSCRIBER TERMINAL

7 Channels — 10 to 140-kc frequency range. Applicable wherever attenuation at carrier frequencies does not exceed 35-db.

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Use-surveys prove that **SUTTLE** Drive-Up Booths are the most profitable outdoor telephone pay stations yet devised. Motorists phone from their cars and coin boxes jingle with increased revenues. Lighted signs, lighted hoods and other accessories immediately available. Priced at $99.50. Call or write **SUTTLE** for full literature.

SUTTLE A-12 SHOP BOOTH

Wherever noise is a problem **SUTTLE's** scientifically designed Model A-12 Shop Booth eliminates hearing problems in your subscriber's noisy plant location. Noise levels are cut by as much as 50%. The A-12 will accommodate any telephone, pay phone or intercom system. Costs less than half of other types. Will last for years—guaranteed by **SUTTLE.** Long wearing, baked gray enamel finish. Only $77.50. Send today for free catalog of complete booth line.

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developed by George W. Dahl Co., Inc. The valve has a flow coefficient of 7.5. Normal ½ inch valves have a Cv of 4.0. The valve is rated for 300 psi maximum pressure at 180 degrees F.

The In-Line Valve (patent applied for) is 2¾ inches in diameter and 3½ inches in length including hexagonal, screwed connections.

Another feature of the In-Line Valve, emphasized by Dahl, is its minimum number of parts and the ease with which the plug can be reversed in the field without extra parts.

The valve is ported on both sides of the operating piston, and can be assembled for spring-to-open or spring-to-close operation. Springs of different rates are available to suit the operating conditions.

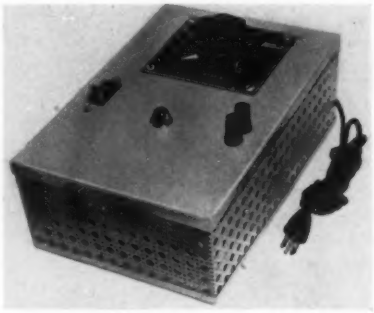
The valve can be operated without the spring as a double acting piston, for hydraulic actuation by any of the well-known displacement methods, the company says.

The Dahl In-Line Valve is available in any barstock material. It has a bronze sleeve and bridge, a stainless steel plug, and neoprene "O" rings. It can be furnished with teflon, or other soft seats, and can be engineered to specific requirements for control signal actuation. Viton "O" rings are available for corrosive and high-temperature applications. Request NP1273.

•

ADJUSTABLE PORTABLE DC POWER SUPPLY — Acme Electric Corp. announces its new continuously-adjustable, portable dc power supply, designed particularly for laboratory work, where a source of direct current is frequently needed for circuit testing, transistor testing and other requirements.

This new portable dc power supply instrument developed in the research division of Acme Electric Corp., plugs into any convenient 60 cycle, 95/130 volt circuit. The filtered direct current output has a range from 0/45 volts, and a capacity of 0/2.5 amperes. The unit is continuously adjustable and stabilized ±1 per cent at any output setting regardless of any alternating current fluctuation, the company reports.



This portable dc power supply, according to Acme Electric, completely eliminates the need for batteries which frequently function erratically when used in dc testing circuits.

This unit is also available in a standard rack model for permanent inclusion in lab test rack installations. Request NP1274.

•

ALUMINUM STRAND HOOK—Hopfeld Industrial Mfg. Co. (HIMCO) is introducing its lightweight aluminum strand hooks for use at the end of a ladder to steady it.

HIMCO states its new strand hook incorporates all the safety features of standard strand hooks now in use. Its outstanding feature is its light weight —1½ pounds per pair compared to 4¼ pounds per pair for many other strand hooks. The company points out

that the 2½ pounds saved make a considerable difference when it involves weight on the end of a ladder.

In testing its HIMCO strand hook, the company says that a pull force of 500 pounds on one hook was required before bending began; and two strand hooks will hold 1,000 pounds on a vertical pull. Finally, with a ladder on a cable at a 75-degree angle, two HIMCO hooks will carry about 2000 pounds. Request NP1275.

•

LOUDSPEAKING, HANDS-FREE TELEPHONE — A new loudspeaking, hands-free telephone is now available from Hayes Aircraft Corp.

Resulting from extensive electronic research and development work in the missile and aircraft fields, the new instrument, named Autotel, is available with new and unusual features. Most pronounced, says the company, is the "no feed-back circuit" which prevents the usual squeal even though the microphone and speaker may be in close proximity to each other.

A second feature, said to be unique, permits automatic operation. At the end of the first ring, the unit turns itself on automatically and when the calling party hangs up it turns itself off.

The company states the amount of volume available provides satisfactory long distance service or conference telephoning.

The Hayes Autotel comes in three standard telephone colors—ivory, gray, green. The Model #641 connects to any standard telephone instrument. The other models have the microphone and controls built into 500-type instruments. Request NP1276.

•

PICKUP TRUCK — The Champ by Studebaker is a "new idea" pickup truck for 1960. It is said to combine an attractively-styled, extra-comfort cab with the functional strength of a solidly-built, rugged truck.

These well-equipped cabs are mounted on a strong, highly-rated truck chassis, which is reported to exceed conventional engineering specifications. The reinforced frame offers rugged, long-life cargo-carrying dependability.

With its new body design, the Champ presents a smart appearance and a lower silhouette.

The cab has been designed, the company says, to provide plenty of room for the driver and two passengers. The new multi-position seats for 1960, with a 5½ inch forward-backward adjustment, are claimed to be larger and softer and are upholstered in vinyl with embossed ridge-pleat design.

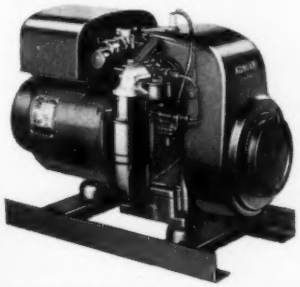
A new two-piece sliding rear window

Reliable emergency power for new OCDM requirements...

KOHLER ELECTRIC PLANTS

Kohler electric plants enable you to meet—fully, reliably, economically—the new OCDM directive covering civil defense radio equipment. The ruling requires installation of automatic emergency generators before radio equipment can be purchased with matching Federal funds. It applies to repeater stations and control positions as well as base stations.

Kohler stand-by plants with automatic transfer switch are fully packaged for immediate, unattended take-over of emergency loads. Kohler electric plants are known throughout the world for rugged, dependable service. Sizes to 100 KW, gasoline and diesel. Write for folder J-14.



MODEL 2.5R21, *2500 watts, 115 volt AC. Air-cooled, gasoline. Remote start.*

MODEL 5RM21, *5KW, 115 volt AC. Air-cooled, gasoline. Remote start.*

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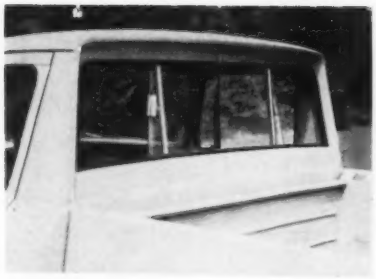

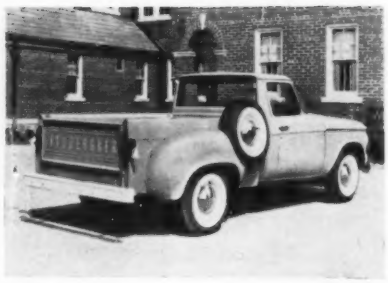

improves visibility, ventilation and interior cooling in the Champ deluxe cab.

Visibility is also improved by the wrap-around windshield. Other features are a newly-designed instrument panel, dish-type steering wheel, vinyl headlining and a locking glove compartment.

Available in ½ and ¾-ton models, the Champ by Studebaker is offered in 5,000, 5,200 and 7,000 GVW (gross vehicle weight) ratings. A choice of two wheelbases—112 and 122 inches—and four engines is offered.

The 5,000 GVW models are equipped with six-cylinder, 170-cubic-inch, 90 hp engines. For 1960, these engines are described as having a new carburetor and cylinder head for better combustion and anti-percolating characteristics.

One of the 5,200 GVW models and one of the 7,000 GVW ¾-ton models have six-cylinder, 245 cubic-inch, 118 hp engines.

Standard engine on the 5,200 GVW ½-ton model and on the 7,000 GVW ¾-ton model, is a V-8, 259 cubic inch, 180 hp power plant. Optional on these models is a V-8, 289 cubic inch, 210 hp engine.

Exterior colors on bodies are available in nine colors; four color combinations of vinyl upholstery trim are available.

All models are offered as a chassis-cab. Request NP1277.

•

AC VOLTMETER—Improved readability and a 40 per cent increase in accuracy are said to be highlights of a new ac voltmeter announced by General Electric's instrument department.

Calibrated from 110 to 130 volts, the instrument is intended for utilities, laboratories, and other industrial applications where holding voltage to a high degree of accuracy is required.

Company engineers said that extremely high readability is made possible because the dial is calibrated in ½-volt intervals. They said that this, combined with nearly linear spacing throughout the full scale, permits fast, accurate readings.

With its accuracy increased from 0.5 to 0.3 per cent of mid-scale value, the new meter provides readings accurate to within plus or minus 0.36 volts. The engineers said this is believed to be the highest accuracy commercially available in this type of voltmeter.

The new instrument uses a General Electric milliammeter element fed by a Zener diode circuit, which spreads 110-130 volts over 95 per cent of the scale length. It is available for both 50/60 and 400 cycle duty, and has a response time of two seconds.

- Low cost—light weight—portable.
- Stampings has over five year's experience in building trouble-free, productive trenchers.
- More in use than any other in its class.
- Shipment made 1 day after order.
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Pow-R-Spade Guarantees Product and Performance!

- Low cost per foot—more profit per job.
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- Cuts neat trenches—easy back-fill.
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POW-R-SPADE IS MADE BY STAMPINGS, INC.

Two flange dimensions may be obtained: 4¼-inch (7.1-inch scale length) and 8¾-inch (14.2-inch scale length). Request NP1278.

•

MAINTENANCE AND REPAIR SEALER KIT—Many maintenance and repair jobs can now be performed quickly and easily, Epoxylite Corp. says, through the use of a sealing compound supplied in the company's Sealer Kit #1-S.

The new sealer kit contains 24 individually packaged units of the sealer. A unique packaging arrangement is claimed to simplify use, insure proper mixing ratios, and provide exceptional field convenience. Because individual units—each containing enough material for a typical repair job—are issued separately, material waste is nearly eliminated.

The Epoxylite sealer in the #1-S kit is versatile, combining electrical insulating properties and high chemical resistance with adhesion to almost all materials. It may be applied in a thin film when rejoining a broken fixture, or it may be applied in any desired thickness when gap-filling properties are required.

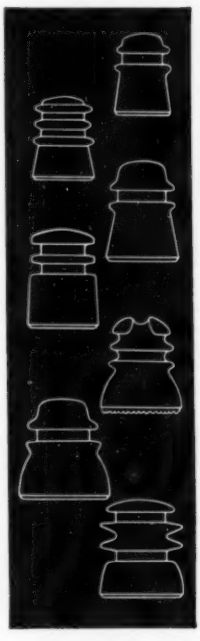
The sealer will cure overnight, Epoxylite says, at temperatures above 70° F, or may be cured in just a few minutes with heat lamps. Such fast cures are extremely valuable in many maintenance and repair applications where expensive down-time may be involved. The cured compound is tough and hard, and may be sanded or worked with machine tools.

The sealer will bond to most metals, to glass, ceramics, most plastics, rubbers, stone, wood, concrete, etc. The bond is waterproof, weatherproof, shock and impact resistant, and serves from –65° F. and below to above 200° F., the company reports.

The unique combination of properties makes the sealer suited for many troublesome maintenance and repair applications. The sealer may be used to rejoin broken parts, to plug castings, to seal against moisture, oil, solvents,

NUMBER 17 - *Toll Grade. Has about the longest leakage path possible with a single petticoat. For exchange circuits and lines not exceeding ten miles.*

HEMINGRAY INSULATORS



Easily and Economically Installed

Hemingray Glass Insulators stand up under severe conditions, do not deteriorate, provide the service you need to assure continuous operation of communication lines. The dependability of Hemingray Insulators as proved by their years of sturdy performance is one of the reasons behind their world-wide acceptance.

Hemingray has pioneered many insulator developments to keep pace with requirements, improve communication systems, assure you a dependable source of supply.

The immediate availability of these insulators is further assurance of Hemingray dependability. An up to date distribution system makes Hemingray Insulators available when you want them and where you need them.

Hemingray Glass Insulators are a product of Kimble Glass Company, subsidiary of Owens-Illinois, Toledo 1, Ohio.

There's a Hemingray Insulator to meet every communication line requirement.

World standard for quality Since 1870

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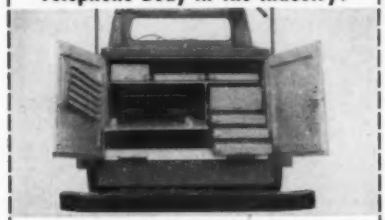
Stahl TMI-76 — Lowest-cost Telephone Body in the Industry!



Stahl TMI-76 — Engineered and built to rigid specifications.

Stahl Cable Splicer Body — built for longest, hardest SERVICE!

MAIL THIS COUPON TODAY FOR COMPLETE INFORMATION & PRICES!

Check product in which you are particularly interested.

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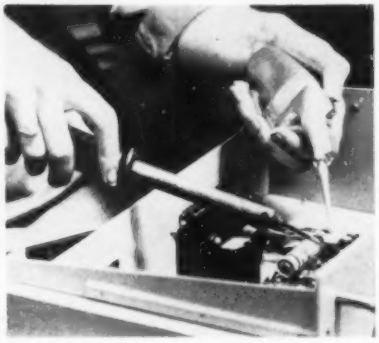
etc. to renew damaged blocks of electrical insulation, to seal cables, pipes, and splices, to join dissimilar materials, or to protect components from chemical attack. Applications have varied from sealing diesel engine A frames cracked in service, to bonding cracks in glass-lined tanks used for the production of penicillin. When used in connection with glass-lined reinforcement, the sealer is said to give structures stronger (on a weight basis) than steel. Request NP1279.

•

WIRE SOLDERING DISPENSER — Products for Industry (PFI), a division of Western Lithograph Co., is offering a wire solder dispenser tool described as having broad application flexibility to the point of solder.

Called the Kormat Wire Solder Dispenser, it has a push button feeder which, according to the company, adjusts the proper amount of solder for each application.



There is provision for a selection of attachments to the tool, including straight or curved probes in several lengths to reach hard-to-get-at areas. It is equipped with a 20-foot roll of 60/40 rosin core solder of .050-inch diameter wire. A flip action will reload the wire solder in seconds, the company states.

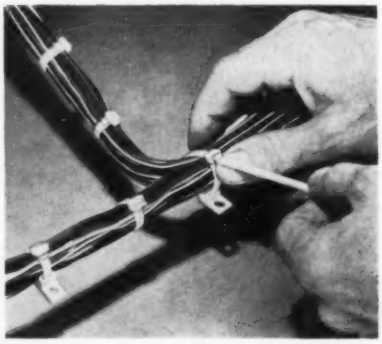
Since inconsistency of solder flow is a problem in production cost, this dispenser tool is said to reduce production costs by eliminating rejects. It is also said to assure clean solder and eliminate faulty connections.

Another feature of the Kormat solder dispenser tool is that it will feed solder wire from .028 to .074 inches in diameter. Request NP1280.

•

WEDGE LOCK BAND CLAMP—The Weckesser Wedge Lock Band Clamp, designed to simplify and speed up wire, cable, tubing, or hose bundling, is now available with a separate mounting tab, the company reports. Because it is not an integral part of the band clamp, the tab need never be in the way at those points along the harness where support is not required. But, at the support points, the tab can be pre-mounted to simplify planning. The band clamp and wiring can then be added later, or the tab can be slipped on its clamp when the cables are bundled in advance and the entire assembly can be mounted at once. Prior to locking, the tab easily slides around on the clamp to any desired position.

The wedge lock band clamp is all nylon and, when used by itself or with the mounting tab, is said to provide permanent, vibration-proof holding ac-



tion. Ratchet teeth on the band engage with matching teeth inside the clamp loop. The small, two-position, floating wedge is notched and can be engaged with a rib on the inside of the loop to provide a permanent lock.

This wedge comes assembled in the clamp and will not fall out, Weckesser states. One size band clamp will accommodate cable or wire diameters from ⅛ inch to 1¾ inches. Once the wedge is pushed into locked position, the clamp can be released only by cutting. Request NP1281.

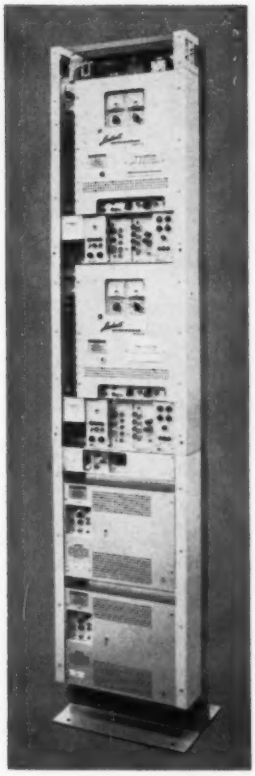
•

MEDIUM-HAUL RADIO SYSTEM — Lenkurt Electric Co. has added new features to its Microtel 74A 6,000-Mc radio system in the medium-haul version now going into production.

The original system introduced two years ago was conservatively designed as a short-haul system, but has been operated successfully over as many as nine hops in some applications.

The new medium-haul system now released from development has greater channel capacity, improved noise characteristics and new mechanical features including built-in metering, according to Lenkurt.

With improved system linearity expanding the usage baseband to 1,300 Kc, rated channel capacity has been improved from 240 to 264 channels of 45BX or 300 channels of "L" carrier. Even with this increased channel loading, total noise has been reduced 4db or



better by improving the IF strip and adding a balanced mixer, the company states.

The new IF amplifier reportedly has enough reserve gain to maintain rated performance throughout tube life.

Lenkurt states the built-in metering panel simplifies tuning and maintenance. Also included in the new radio system is a marker cavity to simplify tuning the local oscillator. Request NP1282.

American Enka Consolidates Wm. Brand & Co., Rex Corp.

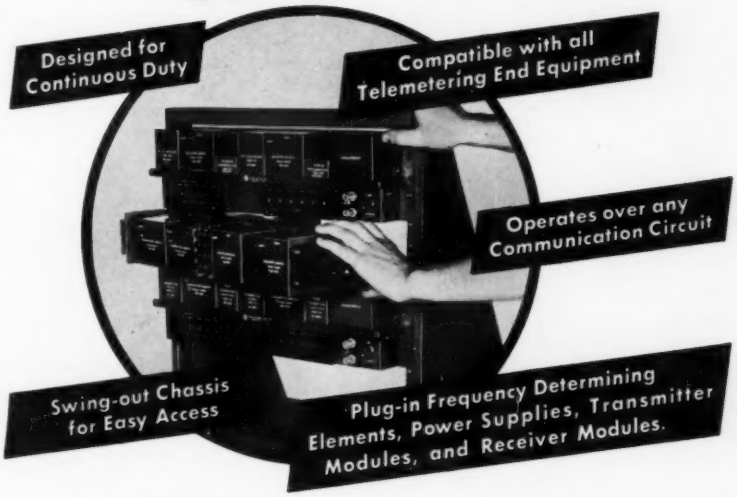
Philip B. Stull, newly elected president of American Enka Corp., announced on Jan. 31 that Enka's two wire and cable properties acquired in 1958 and 1959 have been consolidated as a division of the parent company to be known as the William Brand-Rex Division. Brand was acquired by American Enka in 1959; Rex became an American Enka subsidiary in 1958.

Except for enlarged and integrated facilities and staff, no changes are contemplated in the engineering and service structure of the division's telephone wire and cable operations. Harold E. Prouty will continue as telephone sales manager, with Robert Kierman remaining his assistant.

Gilbert E. Bell, formerly president of The Rex Corp., is director of marketing for the division. Alfred W.

REMOTE INSTRUMENTATION & CONTROL

Comtel® Transistorized Modular Terminal Units for TELEMETERING and CONTROL APPLICATIONS


Designed for Continuous Duty
Compatible with all Telemetering End Equipment
Operates over any Communication Circuit
Swing-out Chassis for Easy Access
Plug-in Frequency Determining Elements, Power Supplies, Transmitter Modules, and Receiver Modules.

The Model 1220 and 1220A Carrier Terminals are completely transistorized and may be operated from station batteries from 12 to 130 DC. Plug-in power supply is available for 115-volt AC operation. All components, including amplifiers, frequency determining components, and power supplies are contained in plug-in modules, and may be readily interchanged. As many as 22 high-speed channels are available between 300 to 3000 cps.

MODEL 1220

The Model 1220 Terminals are normally used in telegraph applications and provide all necessary carrier and loop jack fields, as well as loop current controls. Two transmitters, two receivers, or a transmitter receiver are available on a single 5¼" x 19" chassis. Operates from station battery or 117-volt AC line.

MODEL 1220A

The Model 1220A Terminals are normally used in telemetering and control applications. The individual modules are mounted on a swing-out chassis and are readily accessible. Four transmitters, four receivers, or two transmitter receivers are available on a single 3½" x 19" chassis. Operates from station battery or 117-volt AC line.

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TEST EQUIPMENT

Locates Trouble FAST

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Full Transistor
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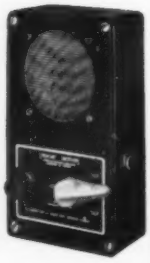
For portable and field use. Accuracy and stability are combined in this laboratory instrument.

NO TUBES—A completely transistorized Unit, economical in battery consumption. Requires no warm-up time.
High stability is achieved by two independent feedback loops, precision resistors and printed circuit wiring. High input impedance and freedom from fluctuations, hum and capacitance of power lines save time and assure better testing.
—50 DBM to +50 DBM, 11 ranges in RED. .003 to 300 volts, 11 ranges, in BLACK. Input impedance, 2 megohms shunted by 25 micromicrofarads. Accuracy 5% of full scale, 100 cycles to 500 KC. Self contained 500 hour battery. Aluminum Case. SIZE 6½" x 4" x 3". Wt. 2 lbs.

COMMUNICATION UNIT



MODEL M — Two Units make a complete intercom system. Each one a master unit.
Enables point of work communication in checking and aligning equipment.
Each a transistor powered amplifier with combination transmitter - speaker, self contained batteries and switching. Unit puts +3 DB on line, —12 DB from line puts out sound sufficient to be heard many feet distant.

STEWART LOCATOR TESTER

MODEL A — The complete Unit for locating grounds, shorts, wet spots and other faults in cables. In addition will locate and determine the depth of buried pipe or conductor.

Speed Cable Tester results by using the EXPLORING COIL AMPLIFIER MODEL E. Increase headphone tone more than 100 times. Pocket size.

STEWART BROTHERS
Division of Instrument Laboratories
315 W. WALTON PL., CHICAGO 10, ILL.

Brand, son of the founder of William Brand & Co., Inc., and formerly its president, is in charge of production; and Robert J. Rodday, former executive vice president of Rex, is director of administration and development. Effective Feb. 1, these three men will headquarter at new executive offices in Concord, Mass., where the division's expanded sales engineering and technical service facilities also are housed.

Headquarters for the parent company is Enka, N. C., where the Enka Research Center, with its extensive facilities and staff of some 200 personnel, is located. Here, a special research group already is at work on development projects for the new division.

The consolidation gives the Brand-Rex Division four manufacturing locations: West Acton, Mass., North Windham, Conn., Willimantic, Conn., and Santa Monica, Cal. Expansion of the West Acton, Mass. and North Windham, Conn. plants is currently under way, and expansion plans are on the drawing boards for existing West Coast facilities.

Kellogg '59 Communications Course Well Attended

The enrollment in the maintenance training program of Kellogg Switchboard & Supply Co. last year almost doubled the 1958 figure, as 115 representatives from the company's civilian and military customers attended the school.

The 50th communications system maintenance course was completed last month.

Five separate groups were graduated from dial switching system training courses during the final two months of 1959. Six representatives of the Puerto Rico Telephone Co. were included in these groups, four in the K-60 Crossbar course and two in the Relaymatic course.

T. P. Leddy, vice president and director of government relations, addressed military classes and presented certificates of completion to graduates. In his talks, he explained Kellogg's expanding communication services and products.

Mr. Leddy said that Kellogg's military communications system maintenance instruction services are being furnished under contract with the Air Training Command. He revealed that this program is one of some 300 technical training courses implemented by the Air Force to train missile men on more than 15 missile systems.

Kellogg's training program is conducted by Department 635 under the direction of Ted Talmadge, COE maintenance training manager.

GT&E Buys Cal. Lab Site; Appoints Gen. O'Connell

The General Telephone & Electronics Laboratories, Inc., a subsidiary of General Telephone & Electronics Corp., has completed arrangements for the acquisition of land in the Palo Alto, Cal., area as a site for future research facilities for the entire GT&E organization.

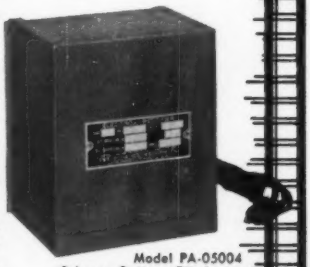
Donald C. Power, chairman and chief

Students of the 50th communications system maintenance course at the Kellogg Switchboard & Supply Co., gathered with their instructors to hear T. P. Leddy (center), vice president and director of government relations, deliver a graduation address. Mr. Leddy presented certificates of completion to the representatives of Independent telephony and of the U. S. Air Force. Left to right, are: Roy J. North, senior COE engineering instructor; SSgt. Billy C. Wilkie; MSgt. Harry T. Wilkin; Harold E. Moore; T. D. Talmage, educational manager; Paul G. Mercer; Mr. Leddy; MSgt. Ira T. Lowe; R. R. Meridith, senior COE engineering instructor; Antonio Padilla, Puerto Rico Telephone Co.; R. A. Reynolds, senior COE engineering instructor; SSgt. Orvan L. Klaus; Gilbert A. Munoz; and SSgt. Gerald L. Millikan.

BE SU-RRR-E!

Make SCHAUER your source for dependable DC POWER!

SCHAUER is recognized by the Telephone Industry throughout the world as a leading manufacturer of battery eliminators and battery chargers for almost every DC power requirement. You save with Schauer—on low first cost, low operating cost, and reliable service. See your Jobber or write for Bulletin No. 1470.



Model PA-05004
Schauer Battery Eliminator

Here's a sure SCHAUER power source for the operator's circuit on magneto switchboards

Schauer Type PA-05004 Battery Eliminator delivers constant, hum-free direct current to the operator's circuit. Equipped with relay for automatically transferring power to stand-by dry cells in the event of AC failure. Standard capacity is 4 volts DC at 0.5 amps. Steel case, for wall mounting is 5½"x6¼"x4".

Rectifier Division
SCHAUER
MANUFACTURING CORP.
4514 Alpine Ave., Cincinnati 42, O.

executive officer of GT&E, made the announcement. Mr. Power said that the "purchase affords us a site in an area of high technical and academic skills and further highlights our determination to participate in the rapid growth of communications and electronics, the two fastest growing industries in the country."

Earlier announcement of the formation of the new GT&E research subsidiary pointed to the two-fold responsibility of basic research and advanced development in major technical fields of broad interest to the current operations, and to the exploration of new technical fields.

General Telephone & Electronics Laboratories is headed by Dr. Herbert Trotter Jr., formerly senior vice president-research and engineering, for Sylvania Electric Products, Inc., also a GT&E subsidiary. Nucleus of the new laboratories is the former Sylvania Research Center in Bayside, L. I.

Mr. Power said, "Selection of Palo Alto as the locale for this new laboratory facility affords us the opportunity to establish closer liaison with our Sylvania operations at Mountain View and Santa Cruz, Cal., and with Lenkurt Electric at San Carlos, Cal."

He also announced that Lt. Gen. James D. O'Connell, retired chief signal officer of the U. S. Army and a vice president of GT&E Laboratories, will be in charge of the West Coast laboratory.

Three Named to Advertising, Sales Posts at Graybar

Effective Feb. 1, R. B. Sayre, vice president of the Graybar Electric Co., Inc., announced the appointment of Edwin Lex Bacon as general advertising and sales promotion manager; Raymond C. Babcock as advertising manager; and Ralph Sackett, Jr. as sales promotion manager. Both Messrs. Babcock and Sackett will report to E. L. Bacon.

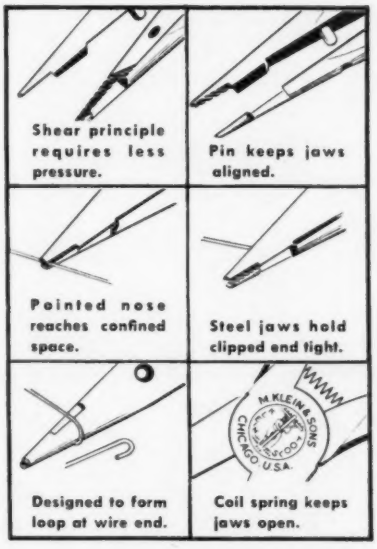
Mr. Bacon has been with the company since 1939 in the advertising and sales promotion department at Graybar's New York headquarters, and was made manager of that department in 1958.

Mr. Babcock joined Graybar in 1943 at their general headquarters. He spent two years in Seattle as sales promotion manager, and returned to New York in 1950 as assistant advertising and sales promotion manager.

Mr. Sackett began in 1952 in Graybar's Florida district. He was made sales promotion manager at Tampa in 1956, and subsequently was transferred to New York, where he worked on sales programming and training.

No. 208-6PC Long Nose Shear Cutting Plier
Patent No. 2,848,724

JUST THE PLIER FOR ELECTRONIC USE


Shear principle requires less pressure.
Pin keeps jaws aligned.
Pointed nose reaches confined space.
Steel jaws hold clipped end tight.
Designed to form loop at wire end.
M. KLEIN & SONS
CHICAGO U.S.A.
Coil spring keeps jaws open.

Here is a plier specially designed for electronic use. It will fit into confined space and steel jaws hold clipped end of sheared wire firmly . . . nothing to wear out.

The shear blade is at an angle of 15 degrees (the standard angle of regular diagonal pliers). Shear principle assures smooth, continuous action without snap, preventing shock which might damage transistors or delicate components. For use with bare wire up to 18 gauge.

See your electronic supply house or
WRITE FOR CATALOG 103-A

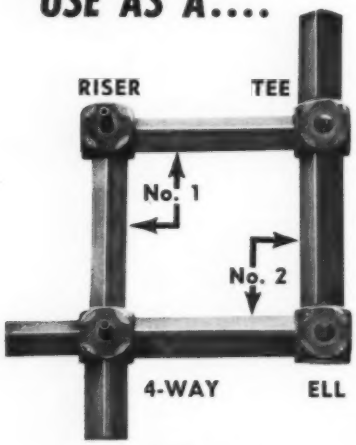
Foreign Distributor: International Standard Electric Corp., New York.

Mathias Established 1857 **KLEIN** & Sons Chicago, Ill., U.S.A.
1200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

Part No. 345 *Patent Pending

NEW, universal fitting* used with the two sizes of Flexiduct solves all over-the-floor wiring problems.

USE AS A....



- **Under Floor Input**
- **Terminal Box**
- **Junction Box**
- **Or In Combinations of All**

Fits any over-the-floor wire molding. This new fitting used with Flexiducts two sizes is the popular, easy solution on all jobs.

Flexiduct No. 1
will carry up to 8 conductors of inside wire. Chase ¼" x ½"

Flexiduct No. 2
will carry up to 25 pair cloth cable or 16 pair plastic. Chase ½" x ¾"

Always Keep Flexiduct on hand

Available through:
Western Electric Co., Inc.
Graybar Electric Co., Inc.
Leich Sales Corp.
Stromberg-Carlson
Kellogg Switchboard & Equipment Co.
Buckeye Telephone & Supply Co.

WINDERS & GEIST, INC.
2219 North Cotner Blvd.
Lincoln 5, Nebraska

McGuffy Appointed North's Pipeline Representative

W. W. Crissinger, vice president, North Electric Co., has announced that the Lynn McGuffy Co., Inc., of Shreveport, La., has been appointed to handle sales of a complete line of automatic control and supervisory equipment specifically engineered for the pipeline transmission and petro-chemical industries.

Through North Electric's integrated system approach, provisions are made in their new Paricode Supervisory Control Equipment for data logging, handling and display and for telemetering of flow data, as well as for operation of remote unattended compressor and booster stations equipped with engine or turbine power.

The McGuffy company, organized in 1952, has offices in both Shreveport, and Houston, Tex. Lynn McGuffy, president, also serves as chairman of the board of the Belen-McGuffy Co., Ltd., Canada, with offices in Calgary and Edmonton.

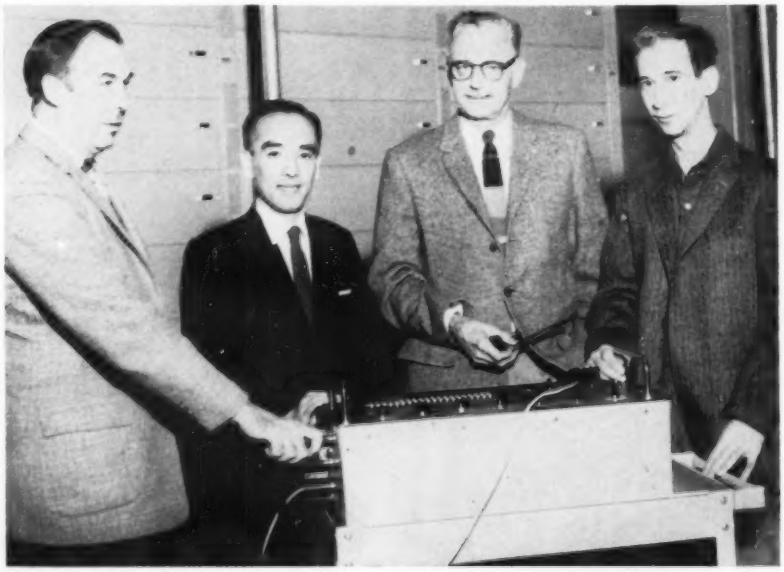
Morris Directs Special Stromberg Products

The appointment of Frank A. Morris as acting director of engineering in Stromberg-Carlson's Special Products Division has been announced by Arthur J. Hatch Jr., vice president and general manager of the division.

F. A. MORRIS

Mr. Morris has been with Stromberg-Carlson since 1943, and since 1945 has directed telecommunication research. In his new position he will have charge of all engineering activities in the Special Products division, which manufactures sound distribution and intercommunication systems, automobile radios, stereophonic high fidelity equipment, loudspeakers, "Pagemaster" selective radio paging systems, and other communications products.

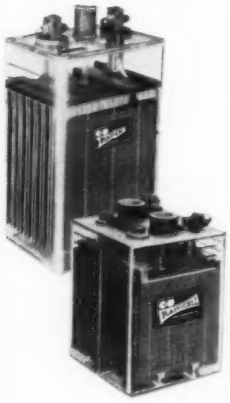
As a project engineer, Mr. Morris was a pioneer in the development of one of the world's first completely elec-



Kotaro Tanaka (second from left), an engineer with Nippon Telephone & Telegraph Co., Tokyo, Japan, recently visited Wood County Telephone Co. of Wisconsin Rapids, Wis. Mr. Tanaka spent more than a week with his hosts (from left), Bernard Smith, auditor; H. B. Flower, general manager, and Richard Smart, plant engineer, learning operations of the company. Here they are shown inspecting the 5,000-line Kellogg K-60 crossbar switching equipment in use at Wisconsin Rapids.

WHERE ELSE
can you get batteries that give you all these features?

1. **Full .266″ thick plates (not just .156″ or .220″)**
2. **Triple insulation (not just dual)**
3. **14-year (PlastiCell)* or 25-year (PlastiCal)® life in full float service**



Get the full story—

Bulletin T-532:
"C & D PlastiCal® Batteries For The Communications Industry"

Bulletin T-533:
"C & D PlastiCell Batteries For The Communications Industry"

Comprehensive new battery bulletins detail outstanding C & D construction advantages . . . give complete rack data . . . display the full lines of C & D PlastiCell (10 to 1680 A.H.) and PlastiCal (50 to 1680 A.H.) telephone batteries. *Write for your copies today.*

Only from C & D !

Thickest, heaviest plates in the industry pack extra capacity, extra life! They are wrapped in woven glass mats, perforated vinyl retainers and have microporous plastic or rubber separators . . . active materials just can't shed away.

That's what you get in C & D PlastiCell* and PlastiCal® telephone batteries. PlastiCell lead-antimony grid batteries are built to give you full 14-year life. Advanced PlastiCal *lead-calcium* grid batteries: 25 years. And PlastiCals require watering less than *once a year!*

Add the advantages of C & D suspended and supported plate construction, *Hi-Impac* covers, transparent, high-heat resistant plastic containers, Plastite Post Seals, and Saftee-Vents . . . and you know why telephone men say: "C & D is your better battery buy."

C & D BATTERIES
of Conshohocken, Pa. . . . Attica, Ind.
DIV. THE ELECTRIC AUTO-LITE CO.

Sales and Service Offices in Principal Cities from Coast to Coast

Manufacturers of Ajax-Cad® Industrial Batteries • PLASTICELL* and PLASTICAL® Batteries for Communications, Control and Auxiliary Power • Producers of Autolay® Silicon Chargers

*Trademark

EXTRA Holding Power
QUICKLY Installed
TOUGH For long life

EVERSTICK
ANCHORS

For new construction and maintenance — Everstick Anchors speed up work and provide dependable anchorage on all types of jobs. Made of resiliant, rust resistant malleable iron. The toughest anchors made. Write for bulletin.

EVERSTICK ANCHOR CO.
FAIRFIELD, IOWA

KATOLIGHT
STANDBY POWER
GASOLINE, GAS, DIESEL MODELS TO 500 KVA
We all agree it is good business to insure against unforeseen losses due to fire, wind or accident . . . but none is available to cover loss of time, inconvenience, discomfort, dangers that power failures bring. You're insured with Katolight Power Plants to keep your electrical equipment functioning whether for 3 minutes or 3 years.

KATOLIGHT
PORTABLE POWER
AVAILABLE ON DOLLIES OR TRAILERS
Crews have "plug-in" power at their finger tips when and where they want it. "Quick, steady power for operating electric saws, grinders, drills, hammers, heaters, sanders, paint sprayers. No delays . . . No nuisance power line hook-ups. 500 to 35,000 watts and up.
BIGGER OVERLOAD CAPACITY.
WRITE FOR
NEW BROCHURE!
Katolight CORPORATION
Box 891-12 Mankato, Minnesota

tronic switching systems at Stromberg-Carlson, and of the company's "XY" toll ticketing system for the automatic recording and computation of toll call billing information. He holds approximately 30 patents, and has a number of additional patent applications pending.

A native of Dover-Foxcroft, Me., Mr. Morris received his bachelor's degree in electrical engineering from the University of New Hampshire in 1937. Prior to joining Stromberg-Carlson, he was for three years with the Bell Telephone Laboratories in New York City, and later was with Control Instrument Corp., and International Standard Electric Corp., both in New York.

He is affiliated with the American Institute of Electrical Engineers, American Association for the Advancement of Science, the Acoustical Society of America, the Society of Motion Picture and Television Engineers, and the Association of American Railroads.

Hilliard Joins Tele-Wire Supply Co. As Salesman

Tele-Wire Supply Co. has announced that Ernest E. Hilliard is representing the company in Kansas, Missouri, Iowa and Nebraska.

Mr. Hilliard, who studied telephone engineering, has served two tours of duty in the United States Navy.

While going to school, he worked for the former Southwest Telephone Co., now a part of the Southwestern Bell Telephone Co.

E. E. HILLIARD

His business experience includes two years with his own contracting company and a position with the Plains Electric Supply Co.

His father was a plant superintendent for the Southwest Telephone Co.

Lynch Carrier Becomes Lynch Communications

Signaling expansion into the general field of communication and remote control, the stockholders of Lynch Carrier Systems, Inc., at their annual meeting on Jan. 20 at the plant in San Francisco, approved a change of the company name to Lynch Communication Systems Inc.

In his remarks to stockholders, Lynch's president, D. E. Campbell, stated that while the telephone business will continue to be the mainstay of the company, expansion into communication systems, including remote control and telemetering systems, is the inevitable result of the company's research and development program. An immediately promising avenue has opened up in connection with remote control, supervisory and telemetering systems based upon an electronic scanner Lynch recently developed.

The importance from a market standpoint of this development is that the Lynch Company can now expand into the electric power, water system, oil and gas pipe line, radio and microwave control, and other fields which have operations that can be benefited by centralization and automation. The existing products of the company have heretofore confined major marketing efforts to the telephone communication field.

Referring to the present status of the business, Mr. Campbell stated that orders received for Lynch standard products for the four-month period from Sept. 1 to Dec. 31, 1959, amounted to $1,139,873. A continuation of this trend, he said, will result in a favorable year for the company.

Sierra Electronics Plans Plant Expansion

Sierra Electronic Corp. on Jan. 14 announced plans for a major expansion of its plant in Menlo Park, Cal.

The company, a division of Philco Corp., will add 50,000 square feet to its engineering and manufacturing facilities in the Bohannon Industrial Park section of Menlo Park. The addition will more than double the company's present plant capacity of 35,000 square feet.

Construction will begin immediately and is expected to be completed in April, according to Willard Feldscher, Sierra's vice president and general manager.

Founded in nearby San Carlos in 1947, Sierra designs and manufactures a broad range of electronic test instruments and systems. Since its founding, the company has grown steadily, and in 1956 was purchased by Philco. Shortly, thereafter, it moved into its present facilities in Menlo Park.

"It is indicative of Sierra's rapid growth that we are now expanding a plant which is less than three years old," Mr. Feldscher said. He pointed out that Sierra's sales have risen steadily in the past few years, and that the company is now a leading U. S. manufacturer of communications test and power measurement equipment, as well as custom test equipment and telemetry systems.

"This plant addition will provide considerably more elbow room for both our engineering and manufacturing operations," Mr. Feldscher declared. "It will give us some 85,000 square feet of total space, of which 64,000 will be devoted to manufacturing and the remainder to research and engineering laboratories and administrative offices."

A. B. Chance Co. to Build Research Center in Mo.

The A. B. Chance Co. will break ground in April for a new engineering research center, to concentrate its engineering and research operations for all plants at one location, and to expand its engineering facilities. The 28,000-square-foot engineering and laboratory building will be erected on a two-acre tract near the headquarters plant in Centralia, Mo.

Facilities will include the most modern equipment in a complete high-voltage laboratory for impulse and 60-cycle testing, heat-run and short-circuit interruption test facilities, an environmental laboratory, mechanical laboratory, plastics laboratory, model shop, photographic department, engineering offices with conference rooms and library, plus outdoor testing facilities for mechanical end electrical testing.

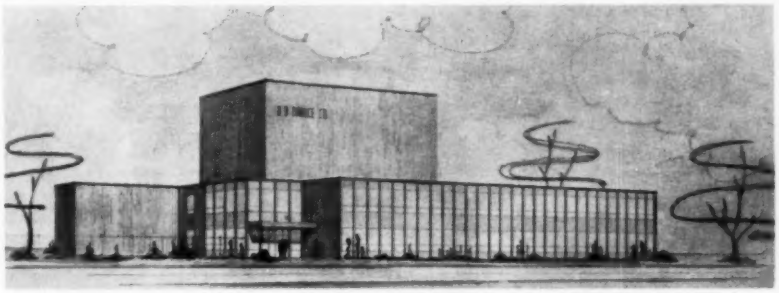
Most of the building will be two stories high, but one section will rise to nearly 60 feet to provide clearance for a 2,400,000-volt impulse generator designed to deliver multi-million volt surges of electricity for testing Chance products used on high voltage lines.

A large rotating generator with a peak output of 500,000 KVA, will be used for high-current testing. Powered by an 800-horsepower motor, it will weigh 40 tons.

Automatic control systems and other built-in safety devices are included to insure the safety of employes who will work with the electrical research and testing equipment.

Like other Chance Co. facilities in Centralia, it will serve the company's plants in Pittsburgh, Pa.; Parkersburg, W. Va.; Carey, O.; and Toronto, Canada, as well as the Centralia factory.

Commonwealth Associates of Jackson, Mich., are consultants for the project being developed under the super-



Artist's drawing of the A. B. Chance Co. Engineering Research Center.

A Directory for the
United Telephone Company of New Jersey
Printed by
R. R. Donnelley & Sons Company
350 East Twenty-second Street, Chicago 16

STATEMENT OF POLICY

To all users, purchasers, jobbers and distributors of products manufactured and sold by Preformed Line Poducts Company, Cleveland, Ohio:

It is and shall continue to be the policy of our Company to sell any and all of our products, patented or unpatented, without limitations, restrictions, conditions or "tie-in" arrangements or understandings of any kind.

It is also our policy that our jobbers and distributors may handle whatever competitive products they choose.

We reserve the right to select our own customers, jobbers and distributors, but the retention of this right shall never be exercised as an indirect method of "tying" our products, or to establish an "exclusive dealing" policy. We also reserve the right to take legitimate and effective steps to prevent anyone from manufacturing, purchasing or using products which infringe any of our patents that have not been adjudged invalid by a competent court.

We have always subscribed to the policies announced above. If any of our sales personnel have violated these policies in the past, we sincerely apologize. Any future statements, representations or conduct in violation of these policies by anyone representing our company or selling our products should be reported directly to me.

Thomas F. Peterson
President
Preformed Line Products Co.
1668 Union Commerce Bldg.
Cleveland 14, Ohio

vision of C. H. LeVee, A. B. Chance Co. vice president, engineering. The engineering research center is scheduled for completion in late 1960.

Sylvania Systems to Manage GT&E Government Projects

Over-all responsibility for systems management of General Telephone & Electronics Corp.'s government projects has been centralized within Sylvania Electronics Systems, a division of Sylvania Electric Products Inc., it was announced on Jan. 27 by Donald C. Power, GT&E chairman.

Mr. Power said that Sylvania Electronic Systems has been assigned responsibility for coordinating the defense systems capabilities of the various GT&E subsidiaries. The subsidiaries include Sylvania, Automatic Electric Co., Leich Electric Co., Lenkurt Electric Co., Inc., Electronic Secretary Industries, Inc., and General Telephone & Electronics Laboratories Inc. Thirty telephone operating subsidiaries serve approximately 5,500 communities in 31 states.

The newly assigned responsibility embraces proposals to the government and to prime contractors for major systems programs in the areas of existing capabilities and for the management and technical direction of contracts resulting from such proposals, Mr. Power said.

Shown discussing the GT&E integrated systems management responsibility are, left to right, Henry Lehne, a senior vice president of Sylvania and general manager of Sylvania Electronic Systems; Donald C. Power, GT&E chairman; and Robert E. Lewis, president of Sylvania. Mr. Lehne is describing operation of the Air Force's Ballistic Missile Early Warning System (BMEWS), pointing out elements on a model of a typical BMEWS site configuration in the Arctic.

"This provides horizontal and vertical integration of the defense project capabilities of General Telephone & Electronics," he commented.

"The integration extends vertically

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attracts revenue with its colorful, clean appearance ... retains profits with sturdy maintenance-free construction.

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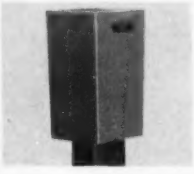
SUPERIOR

9 times 1st. in Plastic Cables!

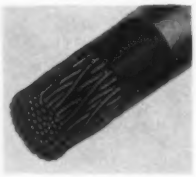
1st. ...to invent a filled plastic splicing sleeve—Super-Splice.

1st. in helping pioneer and develop the new buried plant concept.

1st. to provide to the independent telephone field graded conductor insulation to more closely match the universal transmission standards for loading coils and terminating equipment.



1st. to develop new buried wire and new pedestal terminals.

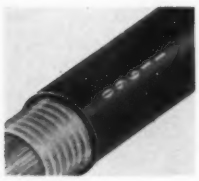


1st. to use an irradiated core tape which more than doubled the dielectric strength of core tapes commonly used during that period.

1st. to incorporate linear type polyethylene for use in insulated wire products.

1st. to manufacture cables for the independent field with a longitudinally applied shielding.

1st. to fabricate and apply corrugated shielding on cable of all sizes.



1st. to perfect the application of sequential foot-marking on wire and cable jackets.

Small wonder
SUPERIOR CABLES
are FIRST in QUALITY!

4495

SUPERIOR CABLE CORPORATION • Hickory, North Carolina

KILLOREN of WISCONSIN

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FULLY EQUIPPED to FURNISH:

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Buried cable crews

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NATCO CLAY CONDUIT provides permanent, low cost protection for Underground Telephone Cables. Available in a full line of shapes.

NATCO CORPORATION

327 Fifth Ave., Pittsburgh 22, Pa.

from raw materials to components and on up to equipments, sub-systems, and systems; horizontally, it extends from basic research and complex operations research studies, to systems analysis; engineering, and management, including conversion to production and quality field service."

Mr. Power said the new organization concept has been designed to meet both specialized military requirements, and the expanding technology of electronics. Under unified systems management, he said, the defense business of General Telephone & Electronics is expected to double over the next five years.

"The systems capabilities of GT&E are unique, in that they combine communications, data processing, and electronic display," Mr. Power said. "By enlarging the scope of Sylvania Electronic Systems, we have established for these diverse skills and facilities a single source for procurement, as well as for authority and responsibility."

In addition to communications, data processing, and display systems, Mr. Power cited the company's experience and skills in the area of detection and tracking systems, intelligence and reconnaissance systems, and ground and air electronic warfare systems.

The diverse components in production or under development, range from tiny transistors to more intricate devices such as traveling wave tubes. Among the many advanced techniques employed is "micro-miniaturization," which has the objective of greatly reducing the size and weight of electronic equipment.

GT&E domestic operations include more than 50 manufacturing plants and 24 laboratories, in addition to the domestic operating telephone companies, with extensive skills in the areas of installation, operation, and maintenance of communications systems. Total employment exceeds 85,000 persons.

Sylvania Electronics Systems' current development and production activities include the automatic electronic defense system for the Air Force B-58 "Hustler" bomber, the data processing phase of the Air Force Ballistic Missile Early Warning Systems (BMEWS), the MOBIDIC computer for the field armies, Army Signal Corps weapons-locating radar equipment, and communications systems for the Navy's "Polaris" program.

C.I.T.A. Appoints Pryde PR Counsel for Industry

The Canadian Independent Telephone Association, made up of Independent telephone companies across Canada, the majority of which serve rural areas, has announced the appointment of William Pryde as public relations counsel to serve the industry.

The board of governors of C.I.T.A. states it is keenly aware of the need to inform the public on the extent of Independent telephony and of the rapid increase in telephone installations in rural areas, particularly throughout Ontario and Quebec where the greatest number of Independent companies operate.

Telephone service has greatly developed and expanded in the areas served by the Independent telephone companies, keeping steady pace with the population growth of Canada. A large percentage of these companies have modernized their plants, bringing technically up-to-date service to small town and rural subscribers.

This expansion has been made possible through public investment—representing a variety of small investors—users conscious of the value and importance of telephone communications and the part it plays in rural development.

H. K. Porter Inc. Elects Northcutt Vice President

W. E. Northcutt was elected vice president of H. K. Porter, Inc. at a recent meeting of the board of directors. The Somerville, Mass. company manufactures metal-cutting and other tools.

W. E. NORTHCUTT

The following officers were elected:

James G. Geddes, president of the corporation for many years, became chairman of the board, and continues as treasurer. Henry K. Porter became the new president, and Francis T. Lind the executive vice president.

Harry M. Webster and Thomas M. Porter were both re-elected vice presidents. Roy S. Fletcher was elected assistant treasurer, and Evelyn C. Lind, the clerk of the corporation.

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An INTRODUCTION to SEMICONDUCTORS

By W. CRAWFORD DUNLAP, Jr. Offers a survey of *all* the important aspects of semiconductors—from research to devices. Covers fundamental concepts, properties of materials, methods of measurement, and applications from a unified point of view. The treatment is almost entirely physical, the emphasis being on mechanisms and devices. It gives full coverage of germanium and silicon and discusses the properties of many other semiconducting elements and compounds. *1957. 417 pages. $11.75.*

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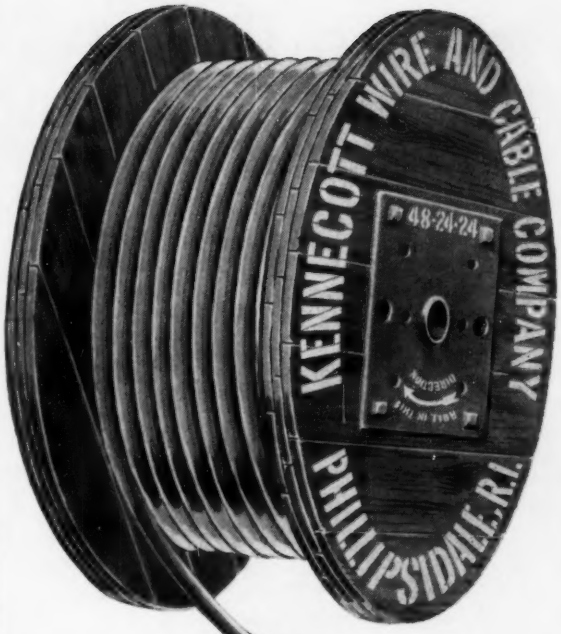

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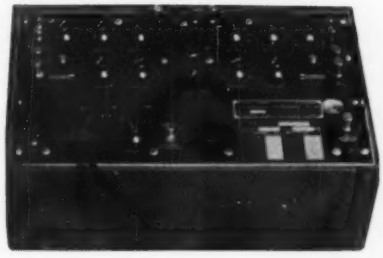

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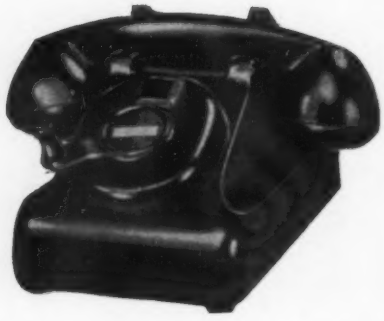

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Index to ADVERTISERS

	Page
Acme Electric Corporation	—
Acme Visible Records, Inc.	29
Advanced Communications Engineering	48
Airtronics International Corp.	—
Alphaduct Wire & Cable Co., The	47
Altec Lansing Corp.	—
Aluminum Company of America	6-7
American Chain & Cable Co., Inc., Page Steel & Wire Div.	—
American Electrical Heater Co.	—
American Steel & Wire Co.	—
American Telephone & Telegraph Co.	—
Anaconda Wire & Cable Co.	—
Ansonia Wire & Cable Co., The	—
Arps Corporation	—
Atlantic Creosoting Co., The	76
Auburn Machine Works, Inc.	—
Audio Development Company	—
Automatic Electric Sales Corp.	17, 41-44, 50-51
Avnet Electronics Corp.	—
Baker Wood Division	—
Barber Advertising Specialties, Walt	—
Bartlett Tree Experts	—
Bell & Co., J. A.	54
Bell Telephone Laboratories, Inc.	—
Benner-Nawman, Inc.	72
Bethlehem Steel Co.	—
Berry & Co., L. M.	—
Bohnsack Equipment Co.	80
British Insulated Callenders' Cables, Ltd.	—
Brown Mfg. Co.	—
Buchart Associates	—
Budelman Electronics Corporation	—
Buckeye Telephone & Supply Co.	59, 79
Burgess-Manning Company	—
Burroughs Corp.	—
Butler Manufacturing Co.	—
B. Y. Dial Service	—
C&D Batteries, Inc.	69
Cabaniss-Pogue Co.	76
Cable Construction Co.	76
Cable Spinning Equipment Co.	—
Calculagraph Company	—
Carroll Electronics, Inc.	—
Cereske Co., William	—
Chance Co., A. B.	—
Charles Machine Works, Inc.	—
Chicopee Mills, Inc.	—
Cleveland Inst. of Electronics	—
Clifton Appraisal Company	—
Collins Radio Co.	39
Colorado Fuel & Iron Co., The	—
Commercial Cord Company, Inc.	46
Communication Equipment & Engineering Co.	57
Cook Electric Company	—
Copperweld Steel Co.	16
Crane Inc., Carl C.	76
Cushman Motor Works, Inc.	—
Dahl Co., Inc., George W.	—
Dampp-Chaser, Inc.	—
Davis Construction Co.	—
Davis, Inc., Archie	—
Dial Haven, Inc.	—
Diamond Expansion Bolt Co.	—
Dillon & Co., Inc., W. C.	75
Donnelley & Sons, R. R.	71
Duo-Safety Ladder Corp.	—
E. & C. Contracting Co.	81
Electric Specialty Co.	—
Everstick Anchor Co.	70
Exide Industrial Division— The Electric Storage Battery Co.	—
Fitchburg Engineering Corporation	49
Foley Construction Co., Robert E.	81
Ford Motor Company, The	—
Gagne Enterprises, Inc.	—
General Cable Corporation	34-35
General Insulated Wire Works	—
General Machine Products Co., Inc.	58
General Telephone Directory Co.	Back Cover
Gould-National Batteries, Inc.	—
Graybar Electric Co.	—
Haley & Co., R. G.	76
Hallamore Electronics Co.	—
Harris-McBurney Company	—
Henkels & McCoy	81
Highway Trailer Company	—
Hirsch Organization Inc., Gustav.	—
Holan Corp.	—
Indiana Steel & Wire Co.	—
Irwin Auger Bit Co.	—
Johns-Manville	—
Katolight Corporation	70
Kearney Co., Jas. J.	—
Kellogg Switchboard & Supply Co.	8-9
Kennecott Wire & Cable Div.	75
Keystone Steel & Wire Co.	—
Killoren Company	74
Klein & Sons, Mathias	67
Kohler Co.	61
Koiled Kords, Inc.	—
Koppers Co., Inc. Wood Preserving Div.	—
Leich Sales Corporation	10-11
Lindsay Telephone Supply Co.	—
Line Equipment Sales	80, 81
Lorain Products Corp., The	5
Magnolia Chemical Co., Inc.	—
McCabe-Powers Body Company	—
McGrath Engineering, Inc.	76
Monsanto Chemical Co.	—
Morrison-Pelsue Co.	52
Mullen Construction Co.	—
Murphy Engineering Laboratories	76
Natco Corporation	74
National Pole & Treating Div.	—
National Standard Co.	37
National Telephone Supply Co.	—
Neubauer Mfg. Co.	—
Neuses, Inc., P. K.	81
North Electric Company	14-15
Okonite Company, The	75
Onan & Sons, D. W.	—
Orangeburg Manufacturing Co., Inc.	—
Div. of The Flintkote Co.	
Osmose Wood Preserving Co.	—
Owens-Illinois	63
Page & Hill, Inc.	—
Panhandle Electric Sales, Inc.	—
Panoramic Radio Products, Inc.	—
Penta Wood Products, Inc.	76
Phelps Dodge Copper Products Corp.	—
Philco Corporation Gov't & Industrial Div.	—
Plastic Wire & Cable Corp.	—
Plastimayd Corporation	—
Porter, Inc., H. K.	—
Power Unit Sales Co.	—
Preformed Line Products Co.	71
Puregas Equipment Corp.	—
Radio Frequency Labs, Inc.	65
Railway Communications, Inc.	—
Ramset Fastening System	—
Rawlplug Company, The	—
Raytheon Company	—
Recordak Corp.	—
Reliable Electric Company	—
Republic Creosoting Company	—
Rex Corporation, The	—
Rohn Manufacturing Co.	—
Rolatape, Inc.	—
Runzel Cord & Wire Co.	56
S & G Manufacturing Co.	—
Schauer Mfg. Co.	67
Seymour Smith & Son	—
Sherron Metallic Corp.	—
Sierra Electronics Corp.	—
Sloan, Cook & Lowe Co.	76
Stahl Metal Products, Inc.	64
Stainless, Inc.	—
Stampings, Inc.	62
Stewart Bros.	66
Stromberg-Carlson Co.	2-3, 55
Studebaker Packard Corporation	83
Superior Cable Corporation	73
Suttle Equipment Corporation	60
Taylor-Colquitt Co., The	—
Telecommunications Consultants	76
Telectric Co.	77
T.E.I. Corp.	76
Tel-E-Lect Products, Inc.	—
Tele-Muff Co.	76
Tele-Wire Supply Co., Inc.	81
Templeton, Kenly & Co.	—
Thornhill Publishing Co.	—
Transandean Associates, Inc.	53
Truck Equipment Company	—
Tudor & Yager, Inc.	81
United Electric Controls Co.	—
U. S. Industrial Chemicals Co.	—
United States Instrument Corp.	—
United States Motors Corp.	—
United States Steel Corp. American Steel & Wire Co.	—
Creosote Division	—
Universal Controls Corp.	—
Utility Service Co., Inc.	—
Utility Tool & Body Co.	—
Warren Mfg. Co., The	18
Weikel Line Company	81
Western Electric Co.	30-31
Whitney-Blake Co.	12-13
Williams Inspection Co., Inc., A. W.	76
Winders & Geist, Inc.	68
Wiremold Co., The	58
Wyoming Valley Equipment Div.	—
York-Hoover Corporation	—

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Bill started work with the General Telephone Directory Company as a sales representative in Herrin, Ill., in 1953. In 1957 he was promoted to sales supervisor and transferred to his current post in Johnstown, N. Y.

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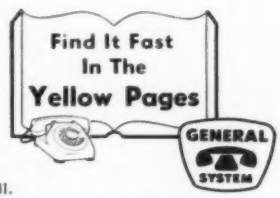

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